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**ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY CLASS I PERMIT**

COMPANY: B.H.P. Copper
FACILITY: San Manuel Smelting Operations
PERMIT #: 1000047
DATE ISSUED:
EXPIRY DATE:

ABSTRACT

This Title V permit is issued to B.H.P. Copper, San Manuel Smelting Operations, the Permittee, for operation of their smelter located at 200 S. Reddington Road, San Manuel, Arizona.

B.H.P. Copper operates a copper smelting facility in San Manuel, AZ. The facility consists of a rotary kiln dryer, a Outokumpu Flash Furnace, four Pierce-Smith Converters, Anode and Utility Vessels, Electrolytic Refinery, Rod Plant, two Acid Plants, Powerhouse Boilers, and other support equipment.

The facility is classified as a Major Source pursuant to A.A.C. R18-2-101.61. The potential emission rates of the following pollutants are greater than major source thresholds: (i) particulate matter with an aerodynamic diameter less than 10 microns, (ii) sulfur dioxide, (iii) nitrogen oxides, (iv) carbon monoxide, and (v) hazardous air pollutants.

This permit is issued in accordance with Title 49, Chapter 3 of the Arizona Revised Statutes. All definitions, terms, and conditions used in this permit conform to those in the Arizona Administrative Code R18-2-101 et. seq. (A.A.C.) and 40 Code of Federal Regulations (CFR), except as otherwise defined in this permit. All terms and conditions in this permit are enforceable by the Administrator of the U.S. Environmental Protection Agency.

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ATTACHMENT "A": GENERAL PROVISIONS

**Air Quality Control Permit No. 1000047
for
BHP Copper, San Manuel Smelting Operations**

I. PERMIT EXPIRATION AND RENEWAL

[A.R.S. § 49-426.F, A.A.C. R18-2-304.C.2, 306.A.1, and 322]

- A. This permit is valid for a period of five years from the date of issuance of the permit.
- B. The Permittee shall submit an application for renewal of this permit at least 6 months, but not more than 18 months prior to the date of permit expiration.

II. COMPLIANCE WITH PERMIT CONDITIONS

[A.A.C. R18-2-306.A.8.a. and b, A.R.S. § 49-463, and A.R.S. §49-464]

- A. The Permittee shall comply with all the conditions contained in Attachments “A” and “B” of this permit including all applicable requirements of Arizona air quality statutes and the air quality rules. Any permit noncompliance constitutes a violation of the Arizona Revised Statutes and is grounds for enforcement action; for permit termination, revocation and reissuance, or revision; or for denial of a permit renewal application. In addition, noncompliance with any federally enforceable requirement constitutes a violation of the Clean Air Act (Act).
- B. Need to halt or reduce activity not a defense. It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

III. PERMIT REVISION, REOPENING, REVOCATION AND REISSUANCE, OR TERMINATION FOR CAUSE

[A.A.C. R18-2-306.A.8.c and 321.A]

- A. The permit may be revised, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit revision, revocation and reissuance, or termination; or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.
- B. The permit shall be reopened and revised under any of the following circumstances:
 - 1. Additional applicable requirements under the Act become applicable to the Class I source. Such reopening shall only occur if there are three or more years remaining in the permit term. The reopening shall be completed not later than 18 months after promulgation of the applicable requirement. No

such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended pursuant to R18-2-322(B). Any permit revision required pursuant to this subparagraph shall comply with provisions in R18-2-322 for permit renewal and shall reset the five year permit term.

2. Additional requirements, including excess emissions requirements, become applicable to an affected source under the acid rain program. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into the Class I permit.
 3. The Director or the Administrator determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.
 4. The Director or the Administrator determines that the permit needs to be revised or revoked to assure compliance with the applicable requirements.
- C. Proceedings to reopen and issue a permit, including appeal of any final action relating to a permit reopening, shall follow the same procedures as apply to initial permit issuance and shall, except for reopenings under paragraph 1 above, affect only those parts of the permit for which cause to reopen exists. Such reopenings shall be made as expeditiously as practicable. Permit reopenings for reasons other than those stated in paragraph III.B.1 of this Attachment shall not result in a resetting of the five year permit term.

IV. POSTING OF PERMIT

[A.A.C. R18-2-315]

Permittee shall post this permit, or a certificate of permit issuance where the facility is located in such a manner as to be clearly visible and accessible. All equipment covered by the permit shall be clearly marked with one of the following:

- A. Current permit number.
- B. Serial number or other equipment number that is also listed in the permit to identify that piece of equipment.
- C. A copy of the complete permit shall be kept on the site.

V. FEE PAYMENT

[A.A.C. R18-2-326 and 306.A.9.]

Permittee shall pay fees to the Director pursuant to A.R.S. § 49-426(E) and A.A.C. R18-2-326.

VI. ANNUAL EMISSIONS INVENTORY QUESTIONNAIRE

[A.A.C. R18-2-327]

- A. Permittee shall complete and submit to the Director an annual emissions inventory questionnaire. The questionnaire is due by March 31 or ninety days after the Director makes the inventory form available each year, whichever occurs later, and shall include emission information for the previous calendar year.
- B. The questionnaire shall be on a form provided by the Director and shall include the information required by A.A.C. R18-2-327.

VII. COMPLIANCE CERTIFICATION

- A. Permittee shall submit a compliance certification to the Director twice each year, which describes the compliance status of the source with respect to each permit condition. The first certification shall be submitted no later than April 15th, and shall report the compliance status of the source during the period between September 16th of the previous year, and March 15th of the current year. The second certification shall be submitted no later than October 15th, and shall report the compliance status of the source during the period between March 16th and September 15th of the current year. [A.A.C. R18-2-309.2.a]

The compliance certifications shall include the following:

- 1. Identification of each term or condition of the permit that is the basis of the certification; [A.A.C. R18-2-309.2.c.i]
- 2. Compliance status with each applicable requirement; [A.A.C. R18-2-309.2.c.ii]
- 3. Whether compliance was based on continuous or intermittent data; [A.A.C. R18-2-309.2.c.iii]
- 4. Each deviation and take it into account in the compliance certification; [40 CFR §70.6.c.5.iii.C]
- 5. Any other material information that must be included in the certification to comply with section 113(c)(2) of the Act, which prohibits knowingly making a false certification or omitting material information; [40 CFR §70.6.c.5.iii.B]

6. Method(s) used for determining the compliance status of the source, currently and over the reporting period; [A.A.C. R18-2-309.2.c.iv]
 7. A progress report on all outstanding compliance schedules submitted pursuant to Section XII.D of this Attachment. Progress reports submitted with compliance certifications satisfy the reporting requirements of A.A.C. R18-2-309.5.d. [A.A.C. R18-2-309.5.d]
- B. A copy of all compliance certifications for Class I permits shall also be submitted to the EPA Administrator. [A.A.C. R18-2-309.2.d]

VIII. CERTIFICATION OF TRUTH, ACCURACY AND COMPLETENESS

[A.A.C. R18-2-309.3]

Any document required to be submitted by this permit, including reports, shall contain a certification by a responsible official of truth, accuracy, and completeness. This certification and any other certification required under this part shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

IX. INSPECTION AND ENTRY

[A.A.C. R18-2-309.4]

The Permittee shall allow the Director or the authorized representative of the Director upon presentation of proper credentials to:

- A. Enter upon the Permittee's premises where a source is located or emissions-related activity is conducted, or where records are required to be kept under the conditions of the permit;
- B. Have access to and copy, at reasonable times, any records that are required to be kept under the conditions of the permit;
- C. Inspect, at reasonable times, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;
- D. Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with the permit or other applicable requirements; and
- E. Record any inspection by use of written, electronic, magnetic and photographic media.

X. PERMIT REVISION PURSUANT TO FEDERAL HAZARDOUS AIR POLLUTANT

STANDARD

If this source becomes subject to a standard promulgated by the Administrator pursuant to section 112(d) of the Act, then the Permittee shall, within twelve months of the date on which the standard is promulgated, submit an application for a permit revision demonstrating how the source will comply with the standard. [A.A.C. R18-2-304.C]

XI. ACCIDENTAL RELEASE PROGRAM

If this source becomes subject to the provisions of 40 CFR Part 68, then the Permittee shall comply with these provisions according to the timeline specified in 40 CFR Part 68. [40 CFR 68]

XII. REPORTING OF EXCESS EMISSIONS, PERMIT DEVIATIONS, AND EMERGENCIES**A. EXCESS EMISSIONS REPORTING** [A.A.C R18-2-310.01]

1. Excess emissions, as defined in A.A.C. R18-2-101.37, shall be reported as follows:
 - a. The Permittee shall report to the Director any emissions in excess of the limits established by this permit. Such report shall be in two parts as specified below:
 - i. Notification by telephone or facsimile within 24 hours of the time when the Permittee first learned of the occurrence of excess emissions including all available information from paragraph b. of this subsection.
 - ii. Detailed written notification within 72 hours of the notification pursuant to subparagraph (i) of this paragraph.
 - b. Report shall contain the following information:
 - i. Identity of each stack or other emission point where the excess emissions occurred.
 - ii. Magnitude of the excess emissions expressed in the units of the applicable emission limitation and the operating data and calculations used in determining the magnitude of the excess emissions.

- iii. Date, time and duration or expected duration of the excess emissions.
 - iv. Identity of the equipment from which the excess emissions emanated.
 - v. Nature and cause of such emissions.
 - vi. If the excess emissions were the result of a malfunction, steps taken to remedy the malfunction and the steps taken or planned to prevent the recurrence of such malfunctions.
 - vii. Steps taken to limit the excess emissions.
2. In the case of continuous or recurring excess emissions, the notification requirements of this section shall be satisfied if the source provides the required notification after excess emissions are first detected and includes in such notification an estimate of the time the excess emissions will continue. Excess emissions occurring after the estimated time period or changes in the nature of the emissions as originally reported shall require additional notification pursuant to subsection A.1.a.(ii) of this Section.

B. PERMIT DEVIATIONS REPORTING

[A.A.C. R18-2-306.A.5]

1. Permittee shall promptly report deviations from permit requirements, including those attributable to upset conditions as defined in the permit, the probable cause of such deviations, and any corrective actions or preventive measures taken. Prompt reporting shall mean that the report was submitted to the Director by certified mail, facsimile, or hand delivery within two working days of the time the deviation occurred.
2. All instances of deviations from permit requirements shall be clearly identified in the required semiannual monitoring report specified in Attachment "B", Section I.B, and shall be certified by the responsible official.

[A.A.C. R18-2-306.A.5.a]

C. EMERGENCY PROVISION

[A.A.C. R18-2-306.E]

1. An "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal

operation and that causes the source to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

- a. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions of paragraph (c) of this subsection are met.
 - b. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - i. An emergency occurred and that the permittee can identify the cause(s) of the emergency;
 - ii. The permitted facility was at the time being properly operated;
 - iii. During the period of the emergency, the permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards or other requirements in the permit; and
 - iv. The permittee submitted notice of the emergency to the Director by certified mail, facsimile, or hand delivery within two working days of the time when emission limitations were exceeded due to the emergency. This notice shall contain a description of the emergency, any steps taken to mitigate emissions, and corrective action taken.
 - c. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof.
 - d. This provision is in addition to any emergency or upset provision contained in any applicable requirement.
- D. For any excess emission or permit deviation that cannot be corrected within 72 hours, the Permittee is required to submit a compliance schedule to the Director within 21 days of such occurrence. The compliance schedule shall include a schedule of remedial measures, including an enforceable sequence of actions with

milestones, leading to compliance with the permit terms or conditions that have been violated.

[A.R.S. 49-426.I.5]

XIII. RECORD KEEPING REQUIREMENTS

[A.A.C. R18-2-306.A.4]

- A. Permittee shall keep records of all required monitoring information including, but not limited to, the following:
 - 1. The date, place as defined in the permit, and time of sampling or measurements;
 - 2. The date(s) analyses were performed;
 - 3. The name of the company or entity that performed the analyses;
 - 4. A description of the analytical techniques or methods used;
 - 5. The results of such analyses; and
 - 6. The operating conditions as existing at the time of sampling or measurement.
- B. Permittee shall retain records of all required monitoring data and support information for a period of at least 5 years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings or other data recordings for continuous monitoring instrumentation, and copies of all reports required by the permit.

XIV. REPORTING REQUIREMENTS

[A.A.C. R18-2-306.A.5.a]

Permittee shall submit the following reports :

- A. Compliance certifications in accordance with Section VII of Attachment “A”.
- B. Reports of excess emissions, permit deviations, and emergencies in accordance with Section XII of Attachment “A”.
- C. Other reports required by Section I.B of Attachment “B”.

XV. DUTY TO PROVIDE INFORMATION

[A.A.C. R18-2-304.G and 306.A.8.e]

- A. The Permittee shall furnish to the Director, within a reasonable time, any information that the Director may request in writing to determine whether cause exists for revising, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the Permittee shall also furnish to the

Director copies of records required to be kept by the permit. For information claimed to be confidential, the Permittee shall furnish an additional copy of such records directly to the Administrator along with a claim of confidentiality.

- B. If the Permittee has failed to submit any relevant facts or if the Permittee has submitted incorrect information in the permit application, the Permittee shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrected information.

XVI. PERMIT AMENDMENT OR REVISION

[A.A.C. R18-2-318, 319 and 320]

Permittee shall apply for a permit amendment or revision for changes to the facility which do not qualify for a facility change without revision under Section XVII, as follows:

- A. Administrative Permit Amendment (A.A.C. R18-2-318);
- B. Minor Permit Revision (A.A.C. R18-2-319);
- C. Significant Permit Revision (A.A.C. R18-2-320).

The applicability and requirements for such action are defined in the above referenced regulations.

XVII. FACILITY CHANGE WITHOUT PERMIT REVISION

[A.A.C. R18-2-317]

- A. Permittee may make changes at the permitted source without a permit revision if all of the following apply:
 - 1. The changes are not modifications under any provision of Title I of the Act or under A.R.S. § 49-401.01(17).
 - 2. The changes do not exceed the emissions allowable under the permit whether expressed therein as a rate of emissions or in terms of total emissions.
 - 3. The changes do not violate any applicable requirements or trigger any additional applicable requirements.
 - 4. The changes satisfy all requirements for a minor permit revision under R18-2-319(A).
 - 5. The changes do not contravene federally enforceable permit terms and conditions that are monitoring (including test methods), recordkeeping, reporting, or compliance certification requirements.

- B. The substitution of an item of process or pollution control equipment for an identical or substantially similar item of process or pollution control equipment shall qualify as a change that does not require a permit revision, if it meets all of the requirements of subsections (A) and (C) of this Section.
- C. For each such change under subsections A and B of this Section, a written notice by certified mail or hand delivery shall be received by the Director and, for Class I permits, the Administrator, a minimum of 7 working days in advance of the change. Notifications of changes associated with emergency conditions, such as malfunctions necessitating the replacement of equipment, may be provided less than 7 working days in advance of the change but must be provided as far in advance of the change as possible or, if advance notification is not practicable, as soon after the change as possible. Each notification shall include:
1. When the proposed change will occur.
 2. A description of each such change.
 3. Any change in emissions of regulated air pollutants.
 4. The pollutants emitted subject to the emissions trade, if any.
 5. The provisions in the implementation plan that provide for the emissions trade with which the source will comply and any other information as may be required by the provisions in the implementation plan authorizing the trade.
 6. If the emissions trading provisions of the implementation plan are invoked, then the permit requirements with which the source will comply.
 7. Any permit term or condition that is no longer applicable as a result of the change.

XVIII. PERFORMANCE TESTING REQUIREMENTS

[A.A.C.R18-2-312]

A. Operational Conditions During Performance Testing

Performance tests shall be conducted during operation at the full load of the unit under representative operational conditions unless other conditions are required by the applicable test method or in this permit. With prior written approval from the Director, testing may be performed at a lower rate. Operations during start-up,

shutdown, and malfunction (as defined in A.A.C. R18-2-101) shall not constitute representative operational conditions unless otherwise specified in the applicable standard.

- B. Performance tests shall be conducted and data reduced in accordance with the test method and procedures contained in the Arizona Testing Manual unless modified by the Director pursuant to A.A.C. R18-2-312.B.

C. Performance Test Plan

At least 14 calendar days prior to performing a test, the owner or operator shall submit a test plan to the Director, in accordance with the Arizona Testing Manual. This test plan must include among others identified in the Arizona Testing Manual the following:

1. test duration;
2. test location(s);
3. test method(s); and
4. source operation and other parameters that may affect test results.

D. Stack Sampling Facilities

Permittee shall provide or cause to be provided, performance testing facilities as follows:

1. Sampling ports adequate for test methods applicable to the facility;
2. Safe sampling platforms;
3. Safe access to sampling platforms; and
4. Utilities for sampling and testing equipment.

E. Interpretation of Final Results

Each performance test shall consist of three separate runs using the required test method. Each run shall be conducted in accordance with the applicable standard and test method. For the purpose of determining compliance with an applicable standard, the arithmetic means of results of the three runs shall apply. If a sample is accidentally lost or conditions occur which are not under the Permittee's control and which may invalidate the run, compliance may, upon the Director's approval, be determined using the arithmetic mean of the other two runs. If the Director, or Director's designee, is present, tests may only be stopped with the Director's or such designee's approval. If the Director or the Director's designee is not present, tests may only be stopped for good cause. Good cause includes, forced shutdown, failure

of an irreplaceable portion of the sample train, extreme meteorological conditions or other conditions beyond the Permittee's control. Termination of any test without good cause after the first run is commenced shall constitute a failure of the test. Supporting documentation which demonstrates good cause must be submitted.

F. Report of Final Test Results

A written report of the results of all performance tests shall be submitted to the Director within 30 days after the test is performed. The report shall be submitted in accordance with the Arizona Testing Manual and A.A.C. R18-2-312.A.

XIX. PROPERTY RIGHTS

[A.A.C. R18-2-306.A.8.d]

This permit does not convey any property rights of any sort, or any exclusive privilege.

XX. SEVERABILITY CLAUSE

[A.A.C. R18-2-306.A.7]

The provisions of this permit are severable. In the event of a challenge to any portion of this permit, or if any portion of this permit is held invalid, the remaining permit conditions remain valid and in force.

XXI. PERMIT SHIELD

[A.A.C. R18-2-325]

Compliance with the conditions of this permit shall be deemed compliance with the applicable requirements identified in this permit. The permit shield shall not apply to any changes made pursuant to Section XVI.B of this Attachment and Section XVII of this Attachment.

ATTACHMENT "B": SPECIFIC PROVISIONS

Air Quality Control Permit No. 1000047

For

BHP Copper, San Manuel Smelting Operations

I. General Requirements

- A. Within 180 days of issuance of this permit the owner or operator shall have on site or on call a person that is certified in EPA Reference Method 9.

[A.A.C. R18-2-306.A.3]

- B. At the time the compliance certifications required by Section VII of Attachment "A" are submitted, the Permittee shall submit reports of all monitoring activities required

by this Attachment performed in the same six month period as applies to the compliance certification period. [A.A.C. R18-2-306.A.5.a]

- C. At the time the monthly reports required by Section IX.C.8.b of this attachment are submitted, Permittee shall also submit reports of sulfur dioxide emissions (stack and fugitive) in tons per year for the preceding twelve months to demonstrate compliance with the limits specified in Attachment C. [A.A.C. R18-2-306.A.5.b]
- D. On completion of the furnace upgrade authorized by Significant Permit Revision #1000681, Permittee shall submit to the Director an Emissions Comparison Report within 60 days after the necessary data for comparison becomes available, but not later than 180 days after initial startup of the upgraded furnace. The Emissions Comparison Report shall include the following:
1. A summary of the facility wide emission data for sulfur dioxide, nitrogen oxides, and particulate matter. This data shall be reported for the post-smelter upgrade project period.
 2. A summary of the results of the performance tests required in Significant Revision #1000681 and how those results compare to the emission limits contained in Significant Revision #1000681.
 3. A comparison of the post-smelter upgrade project period emissions of sulfur dioxide, nitrogen oxides, and particulate matter with the pre-smelter upgrade project emissions of those same pollutants.
 4. A comparison of the post-smelter upgrade project period emissions of sulfur dioxide, nitrogen oxides, and particulate matter with the estimated post-smelter upgrade project emissions of those same pollutants used in the emission analysis for processing Significant Revision #1000681. Specifically, the overall emission estimates of 11, 547 tpy of sulfur dioxide, 237 tpy of nitrogen oxides, and 1802 tpy of particulate matter shall be compared to verify legitimacy.
 5. A comparison of the estimated upgrade project emission rates of 2073 tpy of sulfur dioxide from post-smelter the Concentrate Dryer and 51 tpy of nitrogen oxides from the Flash Smelter Combustion (Acid Plant Tail Stack) with the corresponding source specific post-smelter upgrade project emissions.
 6. The data and the methods used to calculate the emission rates reported in the Emissions Comparison Report.
[Significant Revision #1000681 to Installation Permit #1241-Condition VIII.A]

II. Concentrate Dryer**A. Particulate Matter, Opacity, and Hazardous Air Pollutants****1. Emission Limitations/Standards**

- a. Permittee shall not cause to be discharged from the dryer, any gases which contain particulate matter in excess of 50 mg/dscm (0.022 gr/dscf). [40 CFR 60.162(a)]
- b. Permittee shall not exceed the emission rate limit specified for the concentrate dryer in Attachment C for PM-10 (particulate matter with an aerodynamic diameter less than 10 microns).
[Significant Revision #1000922 to Installation Permit #1241-Condition II.D]
- c. Permittee shall not discharge or cause the discharge of particulate matter into the atmosphere in excess of the hourly rate shown in the following table for the process weight rate identified:

Process weight rate (pounds per hour)	Emission rate (pounds per hour)
50	0.36
100	0.55
500	1.53
1000	2.25
5000	6.34
10,000	9.73
20,000	14.99
60,000	29.60
80,000	31.19
120,000	33.28
160,000	34.85
200,000	36.11
400,000	40.35
1,000,000	46.72

[40 CFR 52.126(b)(1)]

- d. Permittee shall not cause to be discharged from the dryer, any visible

emissions which exhibit greater than 20 percent opacity. Compliance with the opacity standard shall be demonstrated by EPA Reference Method 9. [40 CFR 60.164(a) & 40 CFR 60.166(b)(3)]

- e. Permittee shall not exceed the emission cap for Arsenic, Lead, and Mercury specified in Attachment C.

[Significant Revision #1000922 to Installation Permit #1241-II.D]

2. Air Pollution Control Requirements

At all times, including periods of startup, shutdown, and malfunction, Permittee shall, to the extent practicable, maintain and operate the baghouse associated with the concentrate dryer in a manner consistent with good air pollution control practice for minimizing particulate matter emissions.

[Significant Revision #1000681 to Installation Permit #1241- Condition II.D

40 CFR 60.11(d) and A.A.C. R18-2-331]

[Material permit conditions are identified by underline]

3. Monitoring, Recordkeeping, and Reporting Requirements

- a. Permittee shall continue to operate a continuous monitoring system to monitor and record the opacity of gases discharged into the atmosphere from the dryer. The span of the system shall be set at 80 to 100 percent opacity. [40 CFR 60.165(b)(1)]

- b. For reporting purposes, periods of excess emissions are defined as any six-minute period during which the average opacity, as measured by the continuous monitoring system exceeds 20%.

[40 CFR 60.165(d)(1)]

- c. Daily monitoring requirement

- (1) Permittee shall maintain records of the 6-minute opacity readings from the continuous opacity monitor.

- (2) At the end of every clock hour, Permittee shall calculate 24-hour rolling averages of the opacity readings.

- (3) If the 24-hour rolling average exceeds 15%, Permittee shall initiate corrective action, as necessary to adjust or repair the controls or equipment to reduce opacity to below the 15% level. Permittee shall keep records of the corrective action performed.

4. Performance Testing Requirements

- a. Permittee shall conduct or cause to be conducted, annual performance tests on the dryer for PM and PM-10 to show compliance with the emission limits specified in subsection 1. EPA Reference Method 5 from 40 CFR 60 shall be used to determine the emissions of PM. EPA Reference Method 201 or 201A specified in 40 CFR 51, Appendix M shall be used to determine the emissions of PM-10. Permittee may elect to use Method 5 to demonstrate compliance with both PM and PM-10 limits. If the emissions as determined by Method 5 are higher than the PM-10 limit specified in subsection 1, Permittee shall conduct Method 201 or 201A performance tests to demonstrate compliance with the PM-10 emission standard.
- b. Performance tests shall be conducted on a quarterly basis on the dryer for emissions of arsenic, lead, and mercury using EPA Reference Method 29. The tests shall be performed on contiguous days whenever possible. Upon determination of compliance with the total limits for each quarter for a year, the tests shall be conducted semiannually the following year. If compliance is determined, the tests shall be conducted annually thereafter. If at any time Permittee exceeds the total limits, the frequency shall be rolled back to every quarter and the same procedure mentioned above shall be followed.
- c. Permittee shall conduct an annual performance test for opacity on the rotary dryer. The performance test shall be conducted in accordance with Reference Method 9 in 40 CFR 60, Appendix A.
- d. If the facility is not operative in the first year, testing shall be performed in the subsequent year within the permit term when the facility resumes operation.

[A.A.C. R18-2-312, A.A.C. R18-2-306.A.3.c, Installation Permit #1241-Condition IV.C, and Significant Revision #1000922 to Installation Permit #1241-Condition IV.A and IV.C]

5. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with 40 CFR 60.162(a), Installation Permit #1241-Attachment B.Condition IV.C, Significant Revision #1000922 to Installation Permit #1241-Conditions II.D, IV.A, and IV.C, Significant Revision #1000681 to Installation Permit #1241-Condition II.D, 40 CFR 52.126(b)(1), 40 CFR 60.164(a), 40 CFR

60.165(b)(1), and 40 CFR 60.165(d)(1).

[A.A.C. R18-2-325]

B. Sulfur Dioxide**1. Emission Limitations/Standards**

- a. Permittee shall limit the amount of sulfur dioxide emitted from the concentrate dryer to 2,073 tons per year based on a 12-month rolling monthly average.

[Significant Revision #1000681 to Installation Permit #1241- Condition II.A]

- b. Permittee shall not exceed the emission cap for sulfur dioxide specified in Attachment C.

[Significant Revision #1000922 to Installation Permit #1241-Condition II.D]

2. Monitoring, Recordkeeping, and Reporting Requirements

- a. Permittee shall continue to operate a Continuous Emission Monitoring System (CEMS) to monitor and record the emission rate of sulfur dioxide discharged into the atmosphere and the stack gas volumetric flow rate from the dryer.

- b. Permittee shall cause to be conducted, quality assurance procedures on the CEM in accordance with the methods specified in 40 CFR 60, Appendix F.

[Significant Revision #1000922 to Installation Permit #1241-Condition IV.B,

A.A.C. R18-2-331& A.A.C. R18-2-312.H.3]

[Material permit conditions are identified by underline]

3. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with Significant Revision #1000922 to Installation Permit #1241-Condition II.D and IV.B.

[A.A.C. R18-2-325]

III. Process Gases from the Flash Furnace and Converter (Acid Plant II and III)**A. Particulate Matter, Opacity, and Hazardous Air Pollutants****1. Emission Limitations/Standards**

- a. Permittee shall not exceed the emission rate limit specified for Acid Plant II and III in Attachment C for particulate matter with

an aerodynamic diameter less than 10 microns (PM-10).

[Significant Revision #1000922 to Installation Permit #1241-Condition II.D]

- b. Permittee shall not discharge or cause the discharge of particulate matter into the atmosphere in excess of the hourly rate shown in the following table for the process weight rate identified:

Process weight rate (pounds per hour)	Emission rate (pounds per hour)
50	0.36
100	0.55
500	1.53
1000	2.25
5000	6.34
10,000	9.73
20,000	14.99
60,000	29.60
80,000	31.19
120,000	33.28
160,000	34.85
200,000	36.11
400,000	40.35
1,000,000	46.72

[40 CFR 52.126(b)(1)]

- c. Permittee shall not cause to be discharged from the acid plant, any visible emissions which exhibit greater than 20 percent opacity.

[40 CFR 60.164(b)]

- d. Permittee shall not exceed the emission cap for Arsenic, Lead, and Mercury specified in Attachment C.

[Significant Revision #1000922 to Installation Permit #1241-Condition II.D]

2. Monitoring, Recordkeeping, and Reporting Requirements

- a. Biweekly monitoring for point sources

- (1) Within 180 days of issuance of this permit, Permittee shall

conduct certified Method 9 performance tests in accordance with Section XVIII of Attachment A for the stacks associated with Acid Plants II and III, while operating at normal representative working conditions, to establish a baseline opacity level for each of the stacks. Within 30 days of establishing the baseline opacity, the Permittee shall report the results to the Director.

- (2) A certified Method 9 observer shall conduct a bi-weekly (once in two weeks) visual survey of visible emissions from the stacks associated with the acid plants when they are in operation. Permittee shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.
- (3) If the observer sees a plume that on an instantaneous basis appears to exceed the baseline opacity level, then the observer shall, if possible, take a six-minute Method 9 observation of the plume.
- (4) If the six-minute opacity of the plume is less than the baseline opacity level, the observer shall make a record of the following:
 - (a) Location, date, and time of the observation; and
 - (b) The results of the Method 9 observation.
- (5) If the six-minute opacity of the plume exceeds the baseline opacity level but is less than the applicable opacity standard, Permittee shall adjust or repair the controls or equipment to reduce opacity to below the baseline opacity level. The observer shall make a record of the following:
 - (a) Location, date, and time of the observation;
 - (b) The results of the Method 9 observation;
 - (c) Date and time when corrective action was taken; and
 - (d) Type of corrective action taken.
- (6) If the six-minute opacity of the plume exceeds the applicable opacity standard, then the Permittee shall do the following:
 - (a) Adjust or repair the controls or equipment to reduce opacity to below the baseline level; and

- (b) Report it as an excess emission for opacity.
- (7) If necessitated by the results of the bi-weekly monitoring, Permittee may reestablish the baseline opacity level(s). Reestablishment of the baseline(s) shall be performed utilizing the same procedures used in setting up the initial baseline level(s). Within 30 days of re-establishing the baseline opacity, the Permittee shall report the results to the Director. The report shall also contain a description of the need for re-establishing the baseline(s).

[A.A.C. R18-2-306.A.3.c]

b. Bi-weekly monitoring for fugitive emissions

- (1) A certified Method 9 observer shall conduct a bi-weekly (once in two weeks) visual survey of fugitive emissions from the acid plants and all associated ductwork from the flash furnace and from the converters when either are in operation.
- (2) If the observer, during the visual survey, does not see any plume from any fugitive source that on an instantaneous basis appears to exceed the applicable opacity standard, then the observer shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.
- (3) If the observer sees a plume from a fugitive source that on an instantaneous basis appears to exceed the applicable opacity standard, then the observer shall if possible take a six-minute Method 9 observation of the plume.
- (4) If the six-minute opacity of the plume exceeds the applicable opacity standard, Permittee shall do the following:
 - (a) Adjust or repair the controls or equipment to reduce opacity to below the opacity standard;
 - (b) Report it as excess emissions.
- (5) If the six-minute opacity of the plume is less than the applicable opacity standard, the observer shall make a record of the following:
 - (a) Name of the observer, location, date, and time of the

- observation; and
- (b) The results of the Method 9 observation.
[A.A.C. R18-2-306.A.3.c]

3. Performance Testing Requirements

- a. Permittee shall conduct or cause to be conducted, annual performance tests on Acid Plants II and III for PM and PM-10 to show compliance with the emission limits specified in subsection 1. Arizona Method A1 shall be used to determine the emissions of PM. EPA Reference Method 201 or 201A specified in 40 CFR 51, Appendix M shall be used to determine the emissions of PM-10. Permittee may elect to use Arizona Method A1 to demonstrate compliance with both PM and PM-10 limits. If the emissions as determined by Arizona Method A1 are higher than the PM-10 limit specified in subsection 1, Permittee shall conduct Method 201 or 201A performance tests to demonstrate compliance with the PM-10 emission standard.
- b. Performance tests shall be conducted on a quarterly basis on Acid Plants II and III for emissions of arsenic, lead, and mercury using EPA Reference Method 29. The tests shall be performed on contiguous days whenever possible. Upon determination of compliance with the total limits for each quarter for a year, the tests shall be conducted semiannually the following year. If compliance is determined, the tests shall be conducted annually thereafter. If at any time Permittee exceeds the total limits, the frequency shall be rolled back to every quarter and the same procedure mentioned above shall be followed.
- c. Permittee shall conduct an annual performance test for opacity on the acid plants. The performance test shall be conducted in accordance with Reference Method 9 in 40 CFR 60, Appendix A.
- d. If the facility is not operative in the first year, testing shall be performed in the subsequent year within the permit term when the facility resumes operation.
[A.A.C. R18-2-312, A.A.C. R18-2-306.A.3.c, Installation Permit #1241-Condition IV.C, and Significant Revision #1000922 to Installation Permit #1241-Condition IV.A and IV.C]

4. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with Installation Permit #1241-Condition IV.C, Significant Revision #1000922 to

Installation Permit #1241-Conditions II.D, IV.A, and IV.C, 40 CFR 52.126(b)(1), and 40 CFR 60.164(b). [A.A.C. R18-2-325]

B. Sulfur Dioxide

1. Emission Limitations/Standards

- a. Permittee shall not exceed the emission cap for sulfur dioxide specified in Attachment C.

[Significant Revision #1000922 to Installation Permit #1241-Condition II.D]

- b. Permittee shall not cause to be discharged into the atmosphere from Acid Plants II and III, any gases which contain sulfur dioxide in excess of 0.065 percent by volume. [40 CFR 60.163(a)]

2. Air Pollution Control Requirements

- a. Permittee shall maintain all ductwork associated with the flash furnace process gas and the converter process gas so as to minimize the occurrence of any leaks. Each circuit shall be monitored for draft in order to minimize the possibility of over pressurization. Biweekly (once in two weeks) walkthrough inspections of the entire ductwork, including the ducts leading from each process source to the gas cleaning circuit and to the acid plant, shall be conducted and results of the inspections shall be recorded in ink into a bound on-site logbook. The logbook shall be made available to Department representatives upon request.

- b. Permittee shall operate the gas cleaning circuit associated with the combined flash furnace and converter process gases in a manner consistent with good air pollution control practices.

- c. At all times, including periods of startup, shutdown, and malfunction, Permittee shall, to the extent practicable, maintain and operate Acid Plant II and III in a manner consistent with good air pollution control practice for minimizing sulfur dioxide emissions from the process gases associated with the flash furnace and the converters.

[40 CFR 60.11(d) and A.A.C. R18-2-331]

[Material permit conditions are identified by underline]

3. Monitoring, Recordkeeping, and Reporting Requirements

- a. Permittee shall continue to operate Continuous Emission Monitoring

Systems (CEMS) to monitor and record sulfur dioxide emissions from Acid Plant II and III. The span of this system shall be set at a sulfur dioxide concentration of 0.2 percent by volume.

[40 CFR 60.165(b)(2)]

- b. Six-hour average sulfur dioxide concentrations shall be calculated and recorded daily for the four consecutive 6-hour periods of each operating day. Each six-hour average shall be determined as the arithmetic mean of the appropriate six contiguous one-hour average sulfur dioxide concentrations provided by the continuous monitoring system required in subsection a.

[40 CFR 60.165(c)]

- c. For reporting purposes, periods of excess emissions that shall be reported are defined as all six-hour periods during which the average emissions of sulfur dioxide, as measured by the continuous monitoring system, exceed the standard (0.065 percent by volume). The Administrator will not consider emissions in excess of the level of the standard for less than or equal to 1.5 percent of the six-hour period during the quarter as indicative of a potential violation of Section III.B.1 provided the acid plants are maintained and operated in a manner consistent with good air pollution control practice for minimizing emissions during these periods. Emissions in excess of the level of the standard during periods of startup, shutdown, and malfunction are not to be included within the 1.5 percent.

[40 CFR 60.165(d)(2)]

- d. Permittee shall cause to be conducted, quality assurance procedures on the CEM in accordance with the methods specified in 40 CFR 60, Appendix F.

[Significant Revision #1000922 to Installation Permit #1241-Condition IV.B,

A.A.C. R18-2-331& A.A.C R8-2-312.H.3]

[Material permit conditions are identified by underline]

4. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with Significant Revision #1000922 to Installation Permit #1241-Conditions II.D and IV.B, 40 CFR 60.163(a), 40 CFR 60.165(b)(2), 40 CFR 60.165(c), and 40 CFR 60.165(d)(2).

[A.A.C. R18-2-325]

C. Nitrogen Oxides

1. Emission Limitations/Standards

Permittee shall limit the nitrogen oxide concentration in the effluent from the tailgas stacks of Acid Plant II and III to not more than 7.33 parts per million (ppm).

[Significant Revision #1000681 to Installation Permit #1241-Condition II.B]

2. Performance Testing Requirements

- a. Permittee shall conduct or cause to be conducted, performance tests on Acid Plants II and III for nitrogen oxides in the first year of the permit term to show compliance with the emission limits specified in subsection 1. EPA Reference Method 7E shall be used to determine the emissions of NO_x.
- b. If the facility is not operative in the first year, testing shall be performed in the subsequent year within the permit term when the facility resumes operation.

[A.A.C. R18-2-312 and A.A.C. R18-2-306.A.3.c]

Permit Shield

Compliance with the conditions of this part shall be deemed compliance with Significant Revision #1000681 to Installation Permit #1241-Condition II.B.

[A.A.C. R18-2-325]

IV. Secondary Gases from the Flash Furnace and Converter (Flash Furnace Fugitive Stack and Converter Secondary Hood Gas Stack)

A. PM, Opacity, and Hazardous Air Pollutants

1. Emission Limitations/Standards

- a. Permittee shall not exceed the emission rate limit specified for the Flash Furnace Fugitive Stack and Converter Secondary Hood Gas Stack in Attachment C for particulate matter with an aerodynamic diameter less than 10 microns (PM-10).

[Significant Revision #1000922 to Installation Permit #1241-Condition II.D]

- b. Permittee shall not discharge or cause the discharge of particulate matter into the atmosphere in excess of the hourly rate shown in the following table for the process weight rate identified:

Process weight rate (pounds per hour)	Emission rate (pounds per hour)
50	0.36
100	0.55
500	1.53
1000	2.25
5000	6.34
10,000	9.73
20,000	14.99
60,000	29.60
80,000	31.19
120,000	33.28
160,000	34.85
200,000	36.11
400,000	40.35
1,000,000	46.72

[40 CFR 52.126(b)(1)]

- c. Permittee shall not cause to be discharged into the atmosphere, any visible emissions which exhibit greater than 20 percent opacity.

[A.A.C. R18-2-715.D]

- d. Permittee shall not exceed the emission cap for Arsenic, Lead, and Mercury specified in Attachment C.

[Significant Revision #1000922 to Installation Permit #1241-Condition II.D]

2. Air Pollution Control Requirements

Permittee shall maintain and operate the electrostatic precipitators (ESP's) associated with the flash furnace fugitive stack and converter secondary hood gas stack for minimizing particulate matter emissions.

[A.A.C. R18-2-331]

[Material permit conditions are identified by underline]

3. Monitoring, Recordkeeping, and Reporting Requirements

a. Initial Requirements

- (1) Within 90 days of permit issuance, Permittee shall install

instrumentation sufficient to monitor the primary voltage and the primary current introduced to the ESP's associated with the flash furnace fugitive stack and the converter secondary hood gas stack.

- (2) Permittee shall collect and record these data daily for a period of 30 consecutive days.
- (3) The average of the 30 consecutive readings for primary voltage and primary amperage, plus two standard deviations, shall become the baseline range for that ESP.

[A.A.C. R18-2-306.A.3.c]

b. Daily Monitoring Requirements

- (1) Permittee shall record the ESP primary voltage and primary amperage on a daily basis and compare the readings to the baseline range.
- (2) If the daily reading is not within the baseline range, Permittee shall initiate corrective action, as necessary, to return the parameters to within the baseline range.
- (3) If necessitated by the results of the daily monitoring, Permittee may reestablish the baseline range. Reestablishment of the baselines shall be performed utilizing the same procedures used in setting up the initial baseline levels. Within 30 days of reestablishing the baseline opacity, the Permittee shall report the results to the Director. The report shall also contain a description of the need for reestablishing the baseline range.

[A.A.C. R18-2-306.A.3.c]

4. Performance Testing Requirements

- a. Permittee shall conduct or cause to be conducted, annual performance tests on the flash furnace fugitive stack and the converter secondary hood gas stack for PM and PM-10 to show compliance with the emission limits specified in subsection 1. Arizona Method A1 shall be used to determine the emissions of PM. EPA Reference Method 201 or 201A specified in 40 CFR 51, Appendix M shall be used to determine the emissions of PM-10. Permittee may elect to use Arizona Method A1 to demonstrate compliance with both PM and PM-10 limits. If the emissions as determined by Arizona Method A1 are

higher than the PM-10 limit specified in subsection 1, Permittee shall conduct Method 201 or 201A performance tests to demonstrate compliance with the PM-10 emission standard.

- b. Performance tests shall be conducted on the flash furnace fugitive stack and the converter secondary hood gas stack or breaching leading to the stack on a quarterly basis for emissions of arsenic, lead, and mercury using EPA Reference Method 29. The tests shall be performed on contiguous days whenever possible. Upon determination of compliance with the total limits for each quarter for a year, the tests shall be conducted semiannually the following year. If compliance is determined, the tests shall be conducted annually thereafter. If at any time Permittee exceeds the total limits, the frequency shall be rolled back to every quarter and the same procedure mentioned above shall be followed.
- c. Permittee shall conduct an annual performance test for opacity on the flash furnace fugitive stack and the converter secondary hood gas stack. The performance test shall be conducted in accordance with Reference Method 9 in 40 CFR 60, Appendix A.
- d. If the facility is not operative in the first year, testing shall be performed in the subsequent year within the permit term when the facility resumes operation.

[A.A.C. R18-2-312, A.A.C. R18-2-306.A.3.c, Installation Permit #1241-Condition IV.C, and Significant Revision #1000922 to Installation Permit #1241-Conditions IV.A and IV.C]

5. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with Installation Permit #1241, Condition IV.C, Significant Revision #1000922 to Installation Permit #1241-Conditions II.D, IV.A, and IV.C, 40 CFR 60.52.126(b)(1), and A.A.C. R18-2-715.D. [A.A.C. R18-2-325]

B. Sulfur Dioxide

1. Emission Limitations/Standards

- a. Permittee shall not exceed the emission cap for sulfur dioxide specified in Attachment C.

[Significant Revision #1000922 to Installation Permit #1241-Condition II.D]

2. Air Pollution Capture Requirements [A.A.C. R18-2-306.A.2]
- a. Secondary Gases from the Flash Smelter
- (1) At all times, including periods of startup, shutdown, and malfunction, Permittee shall continue to operate and maintain the launder system that was installed and upgraded pursuant to Significant Permit Revision No. 1000681.
 - (2) Permittee shall maintain all ductwork associated with the captured fugitive gas from the flash furnace so as to minimize the occurrence of any leaks. Biweekly walkthrough inspections of the entire ductwork shall be conducted and results of the inspections shall be recorded in ink into a bound on-site logbook. The logbook shall be made available to Department representatives upon request
- b. Secondary Gases from the Converters
- (1) Permittee shall not operate any copper converter unless it is equipped with a secondary hood system.
 - (2) At all times, including periods of startup, shutdown, and malfunction, Permittee shall continue to operate and maintain the converter secondary hood collection system.
 - (3) Permittee shall maintain all ductwork associated with the converter secondary hood gas so as to minimize the occurrence of any leaks. Biweekly walkthrough inspections of the entire ductwork shall be conducted and results of the inspections shall be recorded in ink into a bound on-site logbook. The logbook shall be made available to Department representatives upon request.
3. Monitoring, Recordkeeping, and Reporting Requirements
- a. Permittee shall continue to operate Continuous Emission Monitoring Systems (CEMS) to monitor and record sulfur dioxide emissions from the flash furnace fugitive stack and the converter secondary hood gas stack.
- b. Permittee shall cause to be conducted, quality assurance procedures on the CEMS in accordance with the methods specified in 40 CFR 60,

Appendix F.

[Significant Revision #1000922 to Installation Permit #1241-Condition IV.B,

A.A.C. R18-2-331 & A.A.C. R18-2-312.H.3]

[Material permit conditions are identified by underline]

4. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with Significant Revision #1000922 to Installation Permit #1241-Conditions II.D and IV.B. [A.A.C. R18-2-325]

V. Converter Roof Vent

A. Opacity and Particulate Matter

1. Emission Limitations/Standards

- a. Permittee shall not cause, allow or permit to be emitted into the atmosphere, any plume or effluent which exceeds 40% opacity as measured by EPA Reference Method 9. [A.A.C. R18-2-702.B]
- b. Permittee shall not exceed the emission rate limit specified in Attachment C for the Converter Roof Vent for particulate matter with an aerodynamic diameter less than 10 microns (PM-10). [Significant Revision #1000922 to Installation Permit #1241-Condition II.D]

2. Monitoring, Recordkeeping, and Reporting Requirements

Bi-weekly monitoring for fugitive emissions

- a. A certified Method 9 observer shall conduct a bi-weekly (once in two weeks) visual survey of fugitive emissions from the converter roof when in operation.
- b. If the observer, during the visual survey, does not see any plume from any fugitive source that on an instantaneous basis appears to exceed the applicable opacity standard, then the observer shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.
- c. If the observer sees a plume from a fugitive source that on an instantaneous basis appears to exceed the applicable opacity standard, then the observer shall if possible take a six-minute Method 9

observation of the plume.

- d. If the six-minute opacity of the plume exceeds the applicable opacity standard, Permittee shall do the following:
 - (1) Adjust or repair the controls or equipment to reduce opacity to below the opacity standard;
 - (2) Report it as excess emissions.
- e. If the six-minute opacity of the plume is less than the applicable opacity standard, the observer shall make a record of the following:
 - (1) Name of the observer, location, date, and time of the observation; and
 - (2) The results of the Method 9 observation.

[A.A.C. R18-2-306.A.3.c]

3. Performance testing requirements

Permittee shall conduct an annual performance test for opacity on the converter roof vent. The performance test shall be conducted in accordance with Reference Method 9 in 40 CFR 60, Appendix A. [A.A.C. R18-2-306.A.3.c]

4. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with A.A.C. R18-2-702.B and Significant Revision #1000922 to Installation Permit #1241, Condition II.D. [A.A.C. R18-2-325]

B. Sulfur Dioxide

1. Emission Limitations/Standards

- a. Permittee shall not exceed the emission cap for sulfur dioxide specified in Attachment C.

[Significant Revision #1000922 to Installation Permit #1241, Condition II.D]

2. Monitoring, Recordkeeping, and Reporting Requirements

- a. Permittee shall continue to operate Continuous Emission Monitoring Systems (CEM) to monitor and record sulfur dioxide emissions from the converter roof vents.

- b. Permittee shall cause to be conducted, quarterly cylinder gas audits on the CEM in accordance with the methods specified in 40 CFR 60, Appendix F. At the time that the cylinder gas audits are conducted, Permittee shall perform velocity traverses on the five (5) converter roof vents.

[Significant Revision #1000922 to Installation Permit #1241-Condition IV.B,

A.A.C. R18-2-331 & A.A.C. R18-2-312.H.3]

[Material permit conditions are identified by underline]

3. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with Significant Revision #1000922 to Installation Permit #1241-Conditions II.D and IV.B. [A.A.C. R18-2-325]

VI. Anode Furnace and Utility Vessels

Particulate Matter and Opacity

A. Emission Limitations/Standards

1. Permittee shall not cause, allow or permit to be emitted into the atmosphere, any plume or effluent which exceeds 40% opacity as measured by EPA Reference Method 9. [A.A.C. R18-2-702.B]
2. Permittee shall limit the particulate matter emissions from the anode furnaces to 622.4 tpy. [Significant Revision #1000681 to Installation Permit #1241-Condition II.E]
3. Permittee shall not cause, allow or permit the discharge of particulate matter into the atmosphere in any one hour in total quantities in excess of the amounts calculated by one of the following equation:
 - a. For process sources having a process weight rate of 60,000 pounds per hour (30 ton per hour) or less, the maximum allowable emissions shall be determined by the following equation:

$$E = 3.59P^{0.62}$$

where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour.

P = the process weight rate in tons-mass per hour

- b. For process sources having a process weight rate greater than 60,000 pounds per hour (30 ton per hour), the maximum allowable emissions shall be determined by the following equation:

$$E = 17.31P^{0.16}$$

where “E” and “P” are defined as indicated in paragraph (a) of this subsection.

[Arizona State Implementation Plan R9-3-502.A.2]

B. Pollution Control Requirements

Permittee shall maintain and operate the steam injection system associated with each of the anode furnaces (4 each) and utility vessels (2 each) to minimize particulate matter emissions.

[Significant Revision #1000681 to Installation Permit #1241-Condition IV.A and A.A.C. R18-2-331]

[Material permit conditions are identified by underline]

C. Monitoring, Recordkeeping, and Reporting Requirements

1. To ensure that the steam injection system on the anode furnaces operate at the maximum feasible efficiency, Permittee shall operate measurement devices to measure and record the steam flow to each steam injection system, in pounds per hour, whenever natural gas is flowing to the tuyeres.
2. Permittee shall log and maintain records of the steam flow to each steam injection system, in pounds per hour, whenever natural gas is flowing to the tuyeres.

[Significant Revision #1000681 to Installation Permit #1241, Condition V.A and VI.A and A.A.C. R18-2-306.A.3.c]

3. Bi-weekly monitoring for fugitive emissions
 - a. A certified Method 9 observer shall conduct a bi-weekly (once in two weeks) visual survey of fugitive emissions from the anode roof when in operation.
 - b. If the observer, during the visual survey, does not see any plume from any fugitive source that on an instantaneous basis appears to exceed the applicable opacity standard, then the observer shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.
 - c. If the observer sees a plume from a fugitive source that on an

instantaneous basis appears to exceed the applicable opacity standard, then the observer shall if possible take a six-minute Method 9 observation of the plume.

- d. If the six-minute opacity of the plume exceeds the applicable opacity standard, Permittee shall do the following:
 - (1) Adjust or repair the controls or equipment to reduce opacity to below the opacity standard;
 - (2) Report it as excess emissions.
- e. If the six-minute opacity of the plume is less than the applicable opacity standard, the observer shall make a record of the following:
 - (1) Name of the observer, location, date, and time of the observation; and
 - (2) The results of the Method 9 observation.

[A.A.C. R18-2-306.A.3.c]

D. Performance testing requirements

Permittee shall conduct an annual performance test for opacity on the anode furnaces and the utility vessels. The performance test shall be conducted in accordance with Reference Method 9 in 40 CFR 60, Appendix A.

[A.A.C. R18-2-306.A.3.c]

E. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with A.A.C. R18-2-702.B, Significant Revision #1000681 to Installation Permit #1241- Conditions II.E, IV.A, V.A, and VI.A.

[A.A.C. R18-2-325]

VII. Fuel Burning Equipment

A. Powerhouse Boilers 7 and 8

1. Nitrogen Oxides

a. Emission Limitations/Standards

- (1) Permittee shall not cause to be discharged to the atmosphere,

any gases that contain nitrogen oxides in excess of 0.10 lb/million Btu. [40 CFR 60.44b(a)]

- (2) The nitrogen oxide standard referenced in Subsection (1) shall apply at all times, including periods of start-up, shutdown, or malfunction. [40 CFR 60.44b(h)]

b. Fuel Restrictions

Permittee shall only burn natural gas in boilers 7 and 8 and shall not burn more than 3,000 million standard cubic feet in any rolling twelve month period. [Installation Permit #211136-Condition V]

c. Monitoring, Recordkeeping, and Reporting Requirements

- (1) Permittee shall maintain daily records of the amount of natural gas burned in boilers 7 and 8. [R18-2-306.A.3.c]
- (2) At the end of every month, Permittee shall maintain records of rolling twelve month totals of natural gas usage in boilers 7 and 8. [R18-2-306.A.3.c]
- (3) Permittee shall continue to calibrate, maintain, and operate continuous monitoring systems for measuring nitrogen oxides emissions discharged to the atmosphere from boilers 7 and 8 and record the output of the systems. The span value for these systems shall be set at 500 ppm. [40 CFR 60.48b(b) and [40 CFR 60.48b(e)(2)]]
- (4) The continuous monitoring system shall be operated and data recorded during all periods of operation of the boilers except for continuous monitoring system breakdown and repairs. Data shall be recorded during calibration checks, and zero and span adjustments. [40 CFR 60.48b(c)]
- (5) Permittee shall determine compliance with the nitrogen oxides standard on a continuous basis through the use of a 30-day rolling average emission rate. A new 30-day rolling average emission rate should be calculated for boilers 7 and 8 on each steam generating unit operating day as the average of all the hourly nitrogen oxide emissions data for the preceding 30 steam generating unit operating days. [40 CFR 60.46b(e)(4)]

- (6) The 1-hour average nitrogen oxides emission rates measured by the continuous monitoring system shall be expressed as lb/million Btu heat input. At least, 2 data points must be used to calculate each 1-hour average. [40 CFR 60.48b(d)]
- (7) When nitrogen oxides emissions data are not obtained because of continuous monitoring system breakdowns, repairs, calibration checks and zero and span adjustments, emission data will be obtained by using standby monitoring systems, Method 7, 7A or other approved reference methods to provide emission data for a minimum of 75 percent of the operating hours in each steam generating unit operating day, in at least 22 out of 30 successive steam generating unit operating days. [40 CFR 60.48b(f)]
- (8) Permittee shall maintain records of the following information for each operating day of boilers 7 and 8:
 - (a) Calender date.
 - (b) The average hourly nitrogen oxides emission rates (in lb/million Btu heat input) measured.
 - (c) The 30-day average nitrogen oxides emission rates (in lb/million Btu input) calculated at the end of each operating day from the measured hourly nitrogen oxide emission rates for the preceding 30 steam generating unit operating days.
 - (d) Identification of the boiler operating days when the calculated 30-day average nitrogen oxides emission rates are in excess of the standard, with the reason for such excess emissions as well as a description of corrective actions taken.
 - (e) Identification of the operating days for which pollutant data have not been obtained, including reasons for not obtaining sufficient data and a description of corrective actions taken.
 - (f) Identification of the times when emission data have been excluded from the calculation of average emission rates and the reason for excluding data.
 - (g) Identification of the times when pollutant concentration exceeded the full span of the continuous monitoring system.
 - (h) Description of any modifications to the continuous monitoring system that would affect the ability of the

continuous monitoring system to comply with Performance Specification 2 or 3.

- (i) Results of the daily CEMS drift tests and quarterly accuracy assessments as required under Appendix F, Procedure 1.

[40 CFR 60.49b(g)]

- (9) Permittee shall submit excess emissions reports for any calendar quarter during which there are excess emissions from boilers 7 and 8. If there are no excess emissions during the calendar quarter, Permittee shall submit a report semiannually stating that no excess emissions occurred during the semiannual reporting period.

[40 CFR 60.49b(h)]

- (10) Permittee shall cause to be conducted, quality assurance procedures on the CEMS for the two boilers in accordance with the methods specified in 40 CFR 60, Appendix F.

[Installation Permit #211136-Condition IV.B, A.A.C. R18-2-331,
& A.A.C. R18-2-312.H.3]

[Material permit conditions are identified by underline]

d. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with 40 CFR 60.44b(a), 40 CFR 60.44b(h), 40 CFR 60.48b(b), 40 CFR 60.48b(e)(2), 40 CFR 60.48b(c), 40 CFR 60.46b(e)(4), 40 CFR 60.48b(d), 40 CFR 60.48b(f), 40 CFR 60.49b(g), 40 CFR 60.49b(h), and Installation Permit #211136-Conditions IV.B and V.

[A.A.C. R18-2-325]

B. Powerhouse Boiler 9

1. Opacity

a. Emission Limitations/Standards

Permittee shall not cause to be discharged to the atmosphere, any gases which exhibit opacity greater than 20 percent using a six-minute average, except for one 6-minute period per hour of not more than 27 percent opacity.

[40 CFR 60.43c(c)]

b. Monitoring, Recordkeeping, and Reporting

Permittee shall continue to operate the Continuous Opacity Monitoring System (COMS) for measuring the opacity of the emissions discharged to the atmosphere and record the output of the system. The COMS shall be operated in accordance with the applicable procedures under Performance Specification 1 (Appendix B of 40 CFR 60). The span value of the COMS shall be between 60 and 80 percent. [40 CFR 60.47c]

c. Performance testing requirements

Permittee shall conduct an annual performance test for opacity on the boiler. The performance test shall be conducted in accordance with Reference Method 9 in 40 CFR 60, Appendix A.

[A.A.C. R18-2-306.A.3.c]

d. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with 40 CFR 60.43c(c) and 40 CFR 60.47(c).

[A.A.C. R18-2-325]

2. Nitrogen Oxides

a. Emission Limitations/Standards

The hourly nitrogen oxide emission rate from Boiler 9, with natural gas as the fuel and operating at rated capacity, shall not exceed 9.13 pounds per hour.

[Significant Revision #1000218 to Installation Permit #1241-Condition X.B]

b. Performance testing requirements

(1) Permittee shall conduct or cause to be conducted on boiler 9, a performance test on for nitrogen oxides in the first year of the permit term to show compliance with the emission limit specified in condition 2.a of this section. EPA Reference Method 7E shall be used to determine the emissions of NO_x.

(2) If the facility is not operative in the first year, testing shall be performed in the subsequent year within the permit term when the facility resumes operation.

[A.A.C. R18-2-312 and A.A.C. R18-2-306.A.3.c]

c. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with Significant Revision #1000218 to Installation Permit #1241-Condition X.B. [A.A.C. R18-2-325]

3. Sulfur Dioxide

a. Emission Limitations/Standards

- (1) Permittee shall not cause to be combusted in boiler 9, any fuel oil which contains greater than 0.5 weight percent sulfur. [40 CFR 60.42c(d)]
- (2) Compliance with this sulfur dioxide limit shall be determined using a 30-day rolling average period. [40 CFR 60.42c(g)]
- (3) The sulfur content limit applies at all times including periods of start-up, shutdown, and malfunction. [40 CFR 60.42c(i)]

b. Monitoring, Recordkeeping, and Reporting Requirements

- (1) Permittee shall submit quarterly reports to the Director. Each quarterly report shall be postmarked by the 30th day following the end of the reporting period. The quarterly reports shall include the following information :
 - (a) For Fuel Oil #2, fuel supplier certification consisting of :
 - i) Calendar dates covered in the reporting period;
 - ii) The name of the oil supplier; and
 - iii) A statement from the oil supplier that the oil complies with the specifications under the definition of distillate oil in 40 CFR 60.41c.
 - (b) If on-specification used oil is the fuel fired in the boiler, records of shipment fuel sampling, as outlined in 40 CFR 60.46c(d)(2) shall be acceptable in lieu of fuel supplier certifications referenced in subparagraph (a).
 - (c) A certified statement signed by the Permittee that the

records of fuel supplier certifications submitted represent all of the fuel combusted during the quarter.

[40 CFR 60.48c(d), 40 CFR 60.48c(e)(11), 40 CFR 60.46c(f), and 40 CFR 60.46c(d)(2)]

- (2) Permittee shall maintain records of the amount of each fuel combusted during each day. [40 CFR 60.48c(g)]

c. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with 40 CFR 60.42c(d), 40 CFR 60.42c(g), 40 CFR 60.42c(i), 40 CFR 60.48c(d), 40 CFR 60.48c(e)(11), 40 CFR 60.46C(f), 40 CFR 60.46c(d)(2), and 40 CFR 60.48c(g).

[A.A.C. R18-2-325]

4. Voluntarily Accepted Limitations

a. Fuel Usage Limitations

- (1) The maximum amounts of fuel burned in the boiler shall not exceed the amounts contained in the following table. The amount and type of fuel burned shall be recorded daily for the boiler when fuel oil #2 or on-specification used oil is being utilized. These records shall be recorded in ink into a bound on-site logbook containing numbered pages. At a minimum, each entry should contain the date, the boiler identification number, as well as the daily amount and type of fuel burned.

Fuel Type	Annual Maximum Usage (gallons)
Fuel Oil #2	1,000,000
On-specification Used Oil	150,000
Combined	1,000,000

- (2) At the end of every month, Permittee shall update records of rolling twelve month totals of each fuel combusted in the boiler and submit quarterly reports to the Director.

[Significant Revision #1000218 to Installation Permit #1241-Condition X.A.1]

- (3) Permit Shield

Compliance with the conditions of this part shall be deemed compliance with Significant Revision #1000218 to Installation Permit #1241, Condition X.A.1. [A.A.C. R18-2-325]

b. On-Specification Used Oil Fuel Requirements

- (1) Permittee shall not burn hazardous waste or hazardous waste fuel in the boiler.
- (2) Permittee is authorized to burn “on-specification” used oil fuel only under the following conditions:
The used oil fuel must be analyzed and certified by the permittee to be “on-specification” according to the definition in ARS § 49-801 and 802. The flash point shall be greater than 100 degree Fahrenheit, and the concentration of the contaminants in the on-specification used oil must not exceed the levels contained in the following table. Compliance with the maximum exhaust emission rates contained in the table will be determined using these concentrations of the constituents.

Constituent	Max influent concentration (parts per million)	Maximum emission rate	
		lb/hr	ton/yr
Arsenic	5 ppm	0.019	0.003
Cadmium	2 ppm	0.008	0.002
Chromium	10 ppm	0.039	.009
Lead	100 ppm	.39	0.057
PCB's	2 ppm	0.0078	0.001

- (3) Permittee shall maintain, on site, for five years, copies of the fuel analysis for each batch of used oil fuel, and shall be responsible for ensuring that the results of the analyses confirm that the contaminant levels specified in subparagraph (2) are not exceeded.

[Significant Revision #1000218 to Installation Permit #1241, Condition X.A.2]

- (4) Permit Shield

Compliance with the conditions of this part shall be deemed compliance with Significant Revision #1000218 to Installation Permit #1241, Condition X.A.2. [A.A.C. R18-2-325]

c. Boiler Specifications

(1) Permittee shall maintain and continuously utilize the following:

- (a) Low NO_x burners;
- (b) Flue gas recirculation of at least 17%; and
- (c) A weld-up of the furnace division wall.

[Significant Revision #1000218 to Installation Permit #1241-Condition X.A.3]

(2) Permit Shield

Compliance with the conditions of this part shall be deemed compliance with Significant Revision #1000218 to Installation Permit #1241-Condition X.A.3. [A.A.C. R18-2-325]

C. Acid Plant Train II Preheater, Acid Plant Train III Preheater, Powerhouse Boiler No. 6, Powerhouse Superheater, Refinery Boiler No.1, Refinery Boiler No. 2, and Rod Plant Thermal Emission Breaker

1. Opacity

a. Emission Limitations/Standards

Permittee shall not cause, allow or permit to be emitted to the atmosphere, any effluent which exceeds 15% opacity.

[A.A.C. R18-2-724.J]

b. Monitoring, Reporting, and Recordkeeping

(1) A certified EPA Reference Method 9 observer shall conduct a monthly survey of visible emissions emanating from the stacks of the boilers. If the opacity of the emissions observed appears to exceed the standard, the observer shall conduct a certified EPA Reference Method 9 observation. The results of the Method 9 observation shall be maintained.

[A.A.C. R18-2-306.A.3.c]

- (2) Permittee shall report all 6-minute periods during which the visible emissions exceeds 15% opacity. [A.A.C. R18-2-724.J]

c. Performance testing requirements

Permittee shall conduct an annual performance test for opacity on the boilers. The performance test shall be conducted in accordance with Reference Method 9 in 40 CFR 60, Appendix A.

[A.A.C. R18-2-306.A.3.c]

d. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with A.A.C.R18-2-724.J. [A.A.C. R18-2-325]

2. Particulate Matter

a. Emission Limitations/Standards

Permittee shall not cause, allow or permit the emission of particulate matter, caused by the combustion of fuel in excess of the amount calculated by the following equation:

$$E = 1.02 Q 0^{.769} \text{ where:}$$

E = the maximum allowable particulate emissions rate in pounds mass per hour.

Q = the heat input in million Btu per hour.

[A.A.C. R18-2-724.C.1]

b. Monitoring, Reporting, and Recordkeeping

When diesel or fuel oil is fired in the boilers, Permittee shall maintain a record of the fuel firing rate and daily lower heating value of the fuel fired in the boilers. This may be accomplished by maintaining on record a copy of that part of the contract with the vendor that specifies the lower heating value of the fuel. [A.A.C. R18-2-306.A.3.c]

c. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C. R18-2-724.C.1. [A.A.C. R18-2-325]

3. Sulfur Dioxide

a. Emission Limitations/Standards

- (1) Permittee shall not emit or cause to emit more than 1.0 pound of sulfur dioxide per million Btu heat input when low sulfur oil is fired. [A.A.C. R18-2-724.E]
- (2) Permittee shall not fire high sulfur oil (greater than 0.9% sulfur) in the boilers. [A.A.C. R18-2-724.G]

b. Monitoring, Reporting, and Recordkeeping

Permittee shall keep records of fuel supplier certification including the following information:

- (1) The name of the diesel supplier;
- (2) The heating value of diesel;
- (3) The density of diesel;
- (4) The sulfur content of diesel from which the shipment came; and
- (5) The method used to determine the sulfur content of diesel. [A.A.C. R18-2-306.A.3.c]

c. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C. R18-2-724.E and A.A.C. R18-2-724.G. [A.A.C. R18-2-325]

D. Rod Plant Shaft Furnace

1. Particulate Matter and Opacity

a. Emission Limitations/Standards

- (1) Permittee shall not cause, allow or permit to be emitted to the atmosphere, any effluent which exceeds 40% opacity. [A.A.C. R18-2-702.B]
- (2) In any one hour period, the Permittee shall not cause, allow or permit the discharge of particulate matter from the rod plant shaft furnace into the atmosphere in excess of the amounts

calculated by one of the following equations:

- (a) For process sources having a process weight rate of 60,000 pounds per hour (30 tons per hour) or less, the maximum allowable emissions shall be determined by the following equation:

$$E = 4.1P^{0.67}$$

where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour.

P = the process weight rate in tons-mass per hour

- (b) For process sources having a process weight rate greater than 60,000 pounds per hour (30 tons per hour), the maximum allowable emissions shall be determined by the following equation:

$$E = 55P^{0.11} - 40$$

where “E” and “P” are defined as indicated in subsection (a) of this subsection.

[A.A.C. R18-2-730.A.1]

b. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C. R18-2-702.B and A.A.C. R18-2-730.A.1.

[A.A.C. R18-2-325]

2. Sulfur Dioxide

a. Emission Limitation/Standards

Permittee shall not cause, allow, or permit the discharge of sulfur dioxide from the rod plant shaft furnace into the atmosphere in excess of 600 parts per million.

[A.A.C. R18-2-730.A.2]

b. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C. R18-2-730.A.2.

[A.A.C. R18-2-325]

3. Nitrogen Oxides

a. Emission Limitations/Standards

Permittee shall not cause, allow, or permit the discharge of nitrogen oxides from the rod plant shaft furnace into the atmosphere in excess of 500 parts per million. [A.A.C. R18-2-730.A.3]

b. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C. R18-2-730.A.3. [A.A.C. R18-2-325]

VIII. Facility wide Fuel Limitations

A. Usage Limitations

1. Permittee shall limit the total amount of natural gas burned from the following equipment to less than 2, 588,000 million British Thermal Units (MMBtu) per year on a rolling twelve month basis: Concentrate Dryer, Converter Combustion, Utility Vessels, Anode Vessels, Acid Plant Preheaters, Rod Plant Shaft Furnace, and Rod Plant Thermal Emissions Breaker.

[Significant Revision #1000681 to Installation Permit #1241-Attachment D.II.C.1]

2. Permittee shall limit the maximum amount of No.2 fuel oil burned in combination for all process equipment to less than 500,000 gallons per year on a rolling twelve month basis.

[Significant Revision #1000681 to Installation Permit #1241-Attachment D.II.C.2]

B. Monitoring, Recordkeeping, and Reporting Requirements

1. Permittee shall log and maintain records of the amounts of natural gas burned in MMBtu/hr in the Concentrate Dryer, Converter Combustion, Utility Vessels, Anode Vessels, Acid Plant Preheaters, Rod Plant Shaft Furnace, and Rod Plant Thermal Emissions Breaker. At the end of every month, Permittee shall update monthly and rolling twelve month totals of natural gas usage.

[Significant Revision #1000681 to Installation Permit #1241-Attachment D.VI.B]

2. Permittee shall log and maintain records of the amount of No. 2 Fuel oil burned at the entire source in gallons per day. At the end of every month, Permittee shall update the monthly and rolling twelve month totals of No. 2 fuel usage.

[Significant Revision #1000681 to Installation Permit #1241-Attachment D.VI.C]

3. Permittee shall report on a quarterly basis, the natural gas burned in combination in the concentrate dryer, converter combustion, utility vessels, anode vessels, acid plant preheaters, rod plant shaft furnace, and rod plant thermal emissions breaker in MMBtu per year for the relevant 12-month rolling periods. [Significant Revision #1000681 to Installation Permit #1241-Attachment D.VIII.C]
4. Permittee shall report on a quarterly basis, the amount of No.2 fuel oil burned in combination for all process equipment in gallons per year for the relevant rolling twelve month periods.

[Significant Revision #1000681 to Installation Permit #1241-Attachment D.VIII.D]

C. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with Significant Revision #1000681 to Installation Permit #1241-Attachment D Conditions II.C.1, II.C.2, VI.B, D.VI.C, VIII.C, and VIII.D. [A.A.C. R18-2-325]

IX. Facility Wide Sulfur Dioxide Emission Standards

A. General Provisions of the Section

1. Applicability

The requirements of this section are applicable to the sulfur dioxide emissions plant wide.

2. Definitions

- a. An “operating day”, for the purpose of this section, means any day in which sulfur containing feed is introduced into the smelting process.
- b. “Compliance period”, for the purposes of this section, means the 365 calendar days immediately preceding the end of each day of the month being reported unless that period includes less than 300 operating days. In such case the number of days preceding the last day of the compliance period shall be increased until the compliance period contains 300 operating days.

B. Emission Limitations and Standards

1. Annual average sulfur dioxide emissions
 - a. Annual average SO₂ emissions from the stack sources shall not exceed 1742 pounds per hour.
[Condition I.B of Significant Revision #1001582 to Operating Permit #0355-88]
 - b. Annual average SO₂ emissions from the uncaptured fugitive source (converter roof) shall not exceed 715 pounds per hour.
[Condition I.C of Significant Revision #1001582 to Operating Permit #0355-88]
2. Allowable sulfur dioxide emissions profile
[Condition I.D of Significant Revision #1001582 to Operating Permit #0355-88]

The number of three-hour average emissions shall not exceed n cumulative occurrences in excess of E, the emission level, shown below in any compliance period:

Allowable SO₂ emissions profile

n	E, Stack (lb/hr)	E, Uncaptured Fugitives (lb/hr)
0	9803	4462
1	8253	4299
2	7619	4222
4	6072	4017
7	5660	3867
12	4922	3460
20	4515	3179
32	4272	3000
48	3945	2827
68	3727	2649
94	3568	2523
130	3419	2361
180	3253	2218
245	3101	2072
330	2958	1923
435	2831	1785
560	2712	1644
710	2615	1517
890	2525	1402
1100	2440	1300
1340	2366	1208
1610	2290	1121
1910	2216	1039
2240	2142	957

C. Monitoring, Recordkeeping and Reporting Requirements

1. Sulfur Balance

As a means of determining total overall emissions, Permittee shall perform monthly material balances for sulfur in accordance with the procedures prescribed in the Attachment D of this permit. [A.A.C. R18-2-715.01(O)]

2. For purposes of determining compliance with the cumulative occurrence and emission limits contained in paragraphs IX.B.1 and 2 of this section, Permittee shall continue to calibrate, maintain, and operate a measurement system for continuously monitoring sulfur dioxide concentrations and stack gas volumetric flow rates (if applicable) of the following:

[A.A.C. R18-2-306.A.3.c]

- a. Concentrator Dryer Stack;
- b. Acid Plant II and III;
- c. Converter secondary hood gas stack;
- d. Flash furnace fugitive stack; and
- e. Converter Roof Vent

3. Quality control and assurance requirements for the continuous monitoring systems

[A.A.C. R18-2-306.A.3.c]

- a. All the stack gas volumetric flow rate measurement systems shall meet 40 CFR Part 60, Appendix B, "Performance Specification 6 - Specifications and Test Procedures for Continuous Emission Rate Monitoring Systems in Stationary Sources":

- (1) Performance and Equipment Specifications
- (2) Calibration Drift Test Procedure
- (3) Relative Accuracy Test Procedure

- b. The SO₂ CEMS shall meet 40 CFR Part 60, Appendix B, "Performance Specification 2 - Specifications and Test Procedures for SO₂ and NO_x Continuous Emission Monitoring Systems in Stationary Sources":

- (1) Installation and Measurement Location Specifications
- (2) Performance and Equipment Specifications
- (3) Performance Specification Test Procedure
- (4) The CEMS Calibration Drift Test Procedure
- (5) Relative Accuracy Test Procedure
- (6) Equations

- c. Permittee shall conduct the demonstrations of measurement systems performance required by the preceding paragraphs a and b in accordance with 40 CFR 60, Appendix F.
 - d. Location change of all sampling points for monitoring sulfur dioxide concentrations and stack gas volumetric flow rates shall be approved in writing by the Director.
 - e. The measurement systems in use shall be subject to the manufacturer's recommended zero adjustment and calibration procedures at least once per 24-hour operating period unless the manufacturer specifies or recommends calibration at shorter intervals, in which case specifications or recommendations shall be followed. Records of these procedures shall be made which clearly show instrument readings before and after zero adjustment and calibration.
 - f. Failure to measure at least 95 percent of the hours during which emissions occurred in any month, using the continuous monitoring systems, shall constitute a violation.
 - g. Failure to measure any 12 consecutive hours of emissions in accordance with the requirements in this subsection shall constitute a violation.
 - h. Permittee shall maintain on hand and ready for immediate installation sufficient spare parts or duplicate systems for the continuous monitoring equipment required by this subsection to allow for the replacement within six hours of any monitoring equipment part which fails or malfunctions during operation.
4. For purposes of this subsection, continuous monitoring means the taking and recording of at least one measurement of sulfur dioxide concentration and stack gas flow rate reading from the effluent of each affected stack, outlet or other approved measurement location in each 15-minute period. An hour of smelter emissions will be considered to have been continuously monitored if the emissions from all monitored stacks, outlets or other approved measurement locations are measured for at least 45 minutes of any hour in accordance with the requirements of this subsection.
5. If Permittee can demonstrate to the Director that measurement of stack gas volumetric flow in the outlet of any particular piece of sulfur dioxide control equipment would yield inaccurate results or would be technologically infeasible, then the Director may allow measurement of the flow rate at an

alternative sampling point.

6. For purposes of determining compliance with the cumulative occurrence and emission limits contained in paragraphs IX.B.1 and 2 of this section, the annual average emissions and three-hour emissions shall be determined as follows:
[A.A.C. R18-2-306.A.3.c]

- a. Permittee shall, at the end of each day, calculate annual average SO₂ emissions by averaging the SO₂ emissions for all hours measured during the compliance period ending on that day.
- b. Permittee shall, at the end of each clock hour, calculate three-hour SO₂ emissions averages by averaging the hourly SO₂ emissions for the preceding three consecutive hours whenever each such hour was measured in accordance with the requirements contained in this subsection.
- c. Periods of malfunction, startup, shutdown or other upset conditions shall be included in the determination.

7. Violation Determination

For purposes of this section, the following scenarios shall be considered violations of the cumulative occurrence and/or emission limits contained in paragraphs IX.B.1 and 2:

- a. An annual emissions average in excess of the allowable annual average emission limit given in paragraph IX.B.1 of this section shall be considered a violation if either:
 - (1) The annual average is larger than the annual average computed for the preceding day; or
 - (2) The annual averages computed for the five preceding days all exceed the allowable annual average emission limit.
- b. A three-hour emissions average in excess of an emission level (E) will be considered to violate the associated cumulative occurrence limit (n) listed in of this section if both:
 - (1) The number of all three-hour emissions averages measured during the compliance period in excess of that emission level exceeds the cumulative occurrence limit associated with the

emission level; and

- (2) The average was measured during the last operating day of the compliance period being reported.
 - c. A three-hour emissions average can only violate the cumulative occurrence limit (n) of an emission level (E) in the day containing the last hour in the average.
 - d. Multiple violations of a cumulative occurrence limit in the same day and violations of different cumulative limits in the same day shall constitute a single violation.
 - e. The violation of any cumulative occurrence limit and an annual average emission limit in the same day shall constitute only a single violation.
 - f. Multiple violations of a cumulative occurrence limit by different three-hour emissions averages containing any common hour shall constitute a single violation.
8. Recordkeeping and Reporting Requirements
- a. Permittee shall maintain a record of all average hourly emissions measurements required to be measured by this section in accordance with the requirements specified in Section XIII, Attachment “A” of this permit.
 - b. Monthly reporting requirements

All of the following measurement results shall be expressed as pounds per hour of sulfur dioxide and shall be summarized monthly and submitted to the Director within 20 days after the end of each month:

- (1) For all periods described in IX.C.6 of this section, the annual average emissions (expressed in pounds per hour) as calculated at the end of each day of the month;
- (2) The total number of hourly periods during the month in which measurements were not taken and the reason for loss of measurement for each period;
- (3) The number of three-hour emissions averages which exceeded each of the applicable emissions levels listed in section IX.B.2

for the compliance periods ending on each day of the month being reported;

- (4) The date on which a cumulative occurrence limit listed in section IX.B.2 was exceeded if such exceedance occurred during the month being reported.

c. Bypass reporting requirements

At each point in the permitted smelter facility where a means exists to bypass the sulfur removal equipment, such bypass shall be instrumented and monitored to detect and record all periods that the bypass is in operation. Permittee shall report to the Director, not later than the 15th day of each month, the information required to be recorded by this Section. Such report shall include an explanation for the necessity of the use of the bypass.

D. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with A.A.C. R18-2-715.01(O), Conditions B, C, and D of Significant Revision #1001582 to Operating Permit #0355-88. [A.A.C. R18-2-325]

X. Converter Arsenic Charging Rate

A. Arsenic Charging Rate Limitation

At such time that the Permittee becomes aware of arsenic charging rates as determined under 40 CFR 61.174(f), in excess of 75 kg/hr on a calendar year basis, Permittee shall submit an application for permit revision in the manner and in accordance with the schedule prescribed by the standard.

“Arsenic charging rate” means the hourly rate at which arsenic is charged to the copper converters based on arsenic content of the copper matte and of any lead matte or any other solid material that is charged to the copper converters.

[40 CFR 61.172(a)]

B. Monitoring Requirements

[40 CFR 61.174(f)]

Permittee shall determine the converter arsenic charging rate as follows:

1. Collect daily grab samples of copper matte and any lead matte charged to the

copper converters.

2. Each calendar month, from the daily grab samples collected under paragraph a above, put together a composite copper matte sample and a composite lead matte sample. Analyze the composite samples individually using Method 108A, 108B, or 108C to determine the weight percent of inorganic arsenic contained in each sample.
3. Calculate the converter arsenic charging rate once per month using the following equation:

$$R_c = \sum_{i=1}^n \frac{A_c W_{ci} \% A_l W_{li}}{100 H_c}$$

Where:

- | | | |
|----------|---|---|
| R_c | = | Converter arsenic charging rate (kg/h). |
| A_c | = | Monthly average weight percent of arsenic in the copper matte charged during the month (%) as determined under paragraph b above. |
| A_l | = | Monthly average weight percent of arsenic in the lead matte charged during the month (%) as determined under paragraph b above. |
| W_{ci} | = | Total weight of copper matte charged to a copper converter during the month (kg). |
| W_{li} | = | Total weight of lead matte charged to a copper converter during the month (kg). |
| H_c | = | Total number of hours the copper converter department was in operation during the month (h). |
| n | = | Number of copper converters in operation during the month. |
4. Determine an annual arsenic charging rate for the copper converter department once per month by computing the arithmetic average of the 12 monthly converter arsenic charging rate values (R_c) for the preceding 12-month period.

C. Recordkeeping and Reporting Requirements

[40 CFR 61.174(f)]

1. Permittee shall maintain at the source for a period of at least 2 years and make available to the Director upon request the following records:
 - a. For all converters, a monthly record of the weight percent of arsenic contained in the copper matte and lead matte as determined under X.B of this section.

[40 CFR 61.176(c)(2)]

- b. For all converters, the monthly calculations of the average annual arsenic charging rate for the preceding 12-month period as determined under X.B of this section. [40 CFR 61.176(c)(3)]
 - 2. Permittee shall submit annually a written report to the Director that includes the monthly computations of the average annual converter arsenic charging rate as calculated under X.B.4 of this section. The annual report shall be postmarked by the 30th day following the end of each calendar year. [40 CFR 61.177(f)]
- D. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with 40 CFR 61.172(a), 40 CFR 61.174(f), 40 CFR 61.176(c)(2), 40 CFR 61.176(c)(3), and 40 CFR 61.177(f). [A.A.C. R18-2-325]

XI. Electrolytic Refinery, Anode Slimes Processing, and Rod Plant

- A. Opacity, Particulate Matter, and Hazardous Air Pollutants
 - 1. Emission Limitations/Standards
 - a. Permittee shall not cause to be discharged into the atmosphere from the stack of the baghouse in the electrolytic refinery any gases which exhibit greater than 40 percent opacity. [A.A.C. R18-2-702.B]
 - b. Permittee shall not discharge or cause the discharge of PM-10, Arsenic, Lead, Selenium, Barium, Silver, and Antimony into the atmosphere from the anode slimes circuit in excess of the emission rates identified in the following table:

Pollutant	Maximum allowable emission rates	
	lb/hr	ton/year
PM-10	0.235	0.2573
Arsenic	0.00024	0.0003
Lead	0.00235	0.0026
Selenium	0.0587	0.0643
Barium	0.0587	0.0643
Silver	0.0151	0.0165

Pollutant	Maximum allowable emission rates	
	lb/hr	ton/year
Antimony	0.000235	0.0003

[Installation Permit #1243-Attachment B.II.B]

- c. Permittee shall not cause, allow or permit the discharge of particulate matter into the atmosphere in any one hour in total quantities in excess of the amounts calculated by one of the following equation:

- (1) For process sources having a process weight rate of 60,000 pounds per hour (30 ton per hour) or less, the maximum allowable emissions shall be determined by the following equation:

$$E = 3.59P^{0.62}$$

where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour.

P = the process weight rate in tons-mass per hour

- (2) For process sources having a process weight rate greater than 60,000 pounds per hour (30 ton per hour), the maximum allowable emissions shall be determined by the following equation:

$$E = 17.31P^{0.16}$$

where “E” and “P” are defined as indicated in paragraph (1) of this subsection.

[Arizona State Implementation Plan R9-3-502.A.2]

2. Air Pollution Control Requirements

- a. Permittee shall maintain and operate the baghouse associated with the anode slimes processing equipment in the electrolytic refinery for minimizing emissions of particulate matter, arsenic, lead, selenium, barium, silver, and antimony. [A.A.C. R18-2-331]

[Material permit conditions are identified by underline]

- b. The baghouse collection efficiency shall be 99.9 percent or greater.

[Installation Permit #1243-Attachment B.VI.A]

- c. The pressure drop across the baghouse shall be maintained in accordance with manufacturer specifications and monitored weekly with an operating pressure gauge that reads inches of water to an accuracy of ± 5 percent. The pressure drop across the baghouse unit shall be at least 4 inches of water or greater, unless the Department has agreed to a different pressure drop. Permittee shall keep records of the weekly pressure drop readings and any corrective action taken.
[Installation Permit #1243-Attachment B.V1.C]
 - d. The baghouse shall contain at least 64 bags. The bag cloth shall be polyester felt or equivalent material.
[Installation Permit #1243-Attachment B.V1.D]
 - e. Hoods, ducts, and drum loading areas shall be maintained to minimize fugitive emission losses. [Installation Permit #1243-Attachment B.V1.E]
3. Performance Testing Requirements
- a. Permittee shall conduct or cause to be conducted, performance tests in the first year of the permit term on the baghouse in the anode slimes circuit of the electrolytic refinery for PM and PM-10 to show compliance with the emission limits specified in Conditions XI.A.1.b and XI.A.1.c. EPA Reference Method 5 from 40 CFR 60 shall be used to determine the emissions of PM. EPA Reference Method 201 or 201A specified in 40 CFR 51, Appendix M shall be used to determine the emissions of PM-10.
 - b. Permittee shall conduct or cause to be conducted, performance tests in the first year of the permit term on the baghouse in the anode slimes circuit of the electrolytic refinery for Arsenic, Lead, Selenium, Barium, Silver, and Antimony to show compliance with the emission limits specified in Condition XI.A.1.b. The tests shall be performed in accordance with the test methods specified in 40 CFR 60 Appendix A.
 - c. Permittee shall conduct an annual performance test for opacity on the anode slimes circuit. The performance test shall be conducted in accordance with Reference Method 9 in 40 CFR 60, Appendix A.
 - d. If the facility is not operative in the first year, testing shall be performed in the subsequent year within the permit term when the facility resumes operation.
[A.A.C. R18-2-312.G and A.A.C. R18-2-306.A.2]

4. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with A.A.C. R18-2-702.B, Installation Permit #1243-Attachment B Conditions II.B, VI.A, VI.C, VI.D, and VI.E. [A.A.C. R18-2-325]

B. Sulfur Dioxide

1. Air Pollution Control Requirement

Permittee shall vent off gases from the Selenium reduction tanks to either Acid Plant II or III to minimize sulfur dioxide emissions.

[Minor Revision #1000521 to Installation Permit #1241-Condition II.A of Attachment B]

[A.A.C. R18-2-331]

[Material permit conditions are identified by underline]

2. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with Minor Revision #1000521 to Installation Permit #1241- Attachment B.Condition II.A.

[A.A.C. R18-2-325]

C. Sulfuric acid mist and volatile organic compounds

1. Emission Limitations/Standards

a. Permittee shall not cause the emission of gaseous or odorous materials from equipment and operations associated with the refinery process in such quantities or concentrations as to cause air pollution.

[A.A.C. R18-2-730.D]

b. Materials including solvents or other volatile compounds, acids, and alkalis utilized in the refinery process shall be processed, stored, used, and transported in such a manner and by such means that they will not evaporate, leak, escape or be otherwise discharged into the ambient air so as to cause or contribute to air pollution. Where means are available to reduce effectively the contribution to air pollution from evaporation, leakage, or discharge, the installation and use of such control methods, devices, or equipment shall be mandatory. [A.A.C. R18-2-730.F]

c. Where a stack, vent or other outlet is at such a level that fumes, gas, mist, odor, smoke, vapor, or any combination thereof constituting air

pollution is discharged to adjoining property, the Director may require the installation of abatement equipment or the alteration of such stack, vent or other outlet by the Permittee thereof to a degree that will adequately dilute, reduce or eliminate the discharge of air pollution to the adjoining property.

[A.A.C. R18-2-730.G]

2. Monitoring, Recordkeeping, and Reporting Requirements

[A.A.C. R18-2-306.A.3.c]

Permittee shall maintain a record of the control measures used at the refinery plant.

3. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with A.A.C. R18-2-730.D, F, and G.

[A.A.C. R18-2-325]

XII. Slag Crushing Circuit

A. PM and Opacity

1. Permittee shall not cause, allow or permit the discharge of particulate matter into the atmosphere in any one hour in total quantities in excess of the amounts calculated by one of the following equation:

- a. For process sources having a process weight rate of 60,000 pounds per hour (30 ton per hour) or less, the maximum allowable emissions shall be determined by the following equation:

$$E = 3.59P^{0.62}$$

where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour.

P = the process weight rate in tons-mass per hour

- b. For process sources having a process weight rate greater than 60,000 pounds per hour (30 ton per hour), the maximum allowable emissions shall be determined by the following equation:

$$E = 17.31P^{0.16}$$

where “E” and “P” are defined as indicated in paragraph (i) of this subsection.

[Arizona State Implementation Plan R9-3-521.A.2]

2. While applying the process weight rate equation, Permittee shall utilize the total process weight from all similar units employing a similar type process to determine the maximum allowable emissions of particulate matter.

[A.A.C. R18-2-721.D]

3. Permittee shall not cause to be discharged into the atmosphere, any visible emissions which exhibit greater than 40 percent opacity.

[A.A.C. R18-2-702.B]

B. Air Pollution Control Requirements

Permittee shall maintain and operate the water misting system associated with the slag handling circuit to minimize particulate matter emissions.

[Minor Revision #1000718 to Operating Permit #1000594-Att B Condition I.5 and A.A.C. R18-2-331]

[Material permit conditions are identified by underline]

C. Monitoring, Recordkeeping, and Reporting Requirements

1. Permittee shall record the daily amount of material processed and the number of hours of operation of the slag handling circuit.

[A.A.C. R18-2-721.F]

2. Permittee shall continue to maintain and operate pressure gauges to measure the nozzle pressure in each pump circuit. The water misters shall be operated within ± 5 percent of the nozzle pressure determined to minimize particulate matter emissions.

[Minor Revision #1000718 to Operating Permit #1000594-Att B Conditions I.2 and II.2]

3. Biweekly monitoring for point sources

- a. Within 180 days of issuance of this permit, Permittee shall conduct certified Method 9 performance tests in accordance with Section XVIII of Attachment A for the stacks associated with the slag handling circuit, while operating at normal representative working conditions, to establish a baseline opacity level for each of the stacks. Within 30 days of establishing the baseline opacity, the Permittee shall report the results to the Director.

- b. A certified Method 9 observer shall conduct a bi-weekly (once in two weeks) visual survey of visible emissions from the stacks associated with the slag handling circuit when they are in operation. Permittee

shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.

- c. If the observer sees a plume that on an instantaneous basis appears to exceed the baseline opacity level, then the observer shall, if possible, take a six-minute Method 9 observation of the plume.
- d. If the six-minute opacity of the plume is less than the baseline opacity level, the observer shall make a record of the following:
 - (1) Location, date, and time of the observation; and
 - (2) The results of the Method 9 observation.
- e. If the six-minute opacity of the plume exceeds the baseline opacity level but is less than the applicable opacity standard, Permittee shall adjust or repair the controls or equipment to reduce opacity to below the baseline opacity level. The observer shall make a record of the following:
 - (1) Name of the observer, location, date, and time of the observation;
 - (2) The results of the Method 9 observation;
 - (3) Date and time when corrective action was taken; and
 - (4) Type of corrective action taken.
- f. If the six-minute opacity of the plume exceeds the applicable opacity standard, then the Permittee shall do the following:
 - (1) Adjust or repair the controls or equipment to reduce opacity to below the baseline level; and
 - (2) Report it as an excess emission for opacity.
- g. If necessitated by the results of the bi-weekly monitoring, Permittee may reestablish the baseline opacity level(s). Reestablishment of the baseline(s) shall be performed utilizing the same procedures used in setting up the initial baseline level(s). Within 30 days of re-establishing the baseline opacity, the Permittee shall report the results to the Director. The report shall also contain a description of the need for re-establishing the baseline(s).

[A.A.C. R18-2-306.A.3.c]

4. Bi-weekly monitoring for fugitive emissions

- a. A certified Method 9 observer shall conduct a bi-weekly (once in two weeks) visual survey of fugitive emissions from the slag handling circuit when in operation.
 - b. If the observer, during the visual survey, does not see any plume from any fugitive source that on an instantaneous basis appears to exceed the applicable opacity standard, then the observer shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.
 - c. If the observer sees a plume from a fugitive source that on an instantaneous basis appears to exceed the applicable opacity standard, then the observer shall if possible take a six-minute Method 9 observation of the plume.
 - d. If the six-minute opacity of the plume exceeds the applicable opacity standard, Permittee shall do the following:
 - (1) Adjust or repair the controls or equipment to reduce opacity to below the opacity standard;
 - (2) Report it as excess emissions.
 - e. If the six-minute opacity of the plume is less than the applicable opacity standard, the observer shall make a record of the following:
 - (1) Name of the observer, location, date, and time of the observation; and
 - (2) The results of the Method 9 observation.

[A.A.C. R18-2-306.A.3.c]
5. Performance testing requirements

Permittee shall conduct an annual performance test for opacity on the slag crushing circuit. The performance test shall be conducted in accordance with Reference Method 9 in 40 CFR 60, Appendix A. [A.A.C. R18-2-306.A.3.c]
6. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with Arizona State Implementation Plan R9-3-521.A.2, A.A.C R18-2-721.D, Minor Revision #1000718 to Operating Permit #1000594-Conditions I.5, I.2, and II.2, and A.A.C R18-2-721.F. [A.A.C. R18-2-325]

XIII. Flue Dust Leach Circuit**Particulate Matter and Opacity****A. Emission Limitations/Standards**

1. Permittee shall not cause to be discharged into the atmosphere, any stack emissions that contain particulate matter in excess of 0.05 grams per dry standard cubic meter. [40 C.F.R. 60.382.(a)(1)]
2. Permittee shall not cause to be discharged into the atmosphere, any stack emissions that exhibit greater than 7 percent opacity unless a wet scrubbing emission control device is used. [40 C.F.R. 60.382.(a)(2)]
3. Permittee shall not discharge or cause the discharge of particulate matter into the atmosphere in excess of the hourly rate shown in the following table for the process weight rate identified:

Process weight rate (pounds per hour)	Emission rate (pounds per hour)
50	0.36
100	0.55
500	1.53
1000	2.25
5000	6.34
10,000	9.73
20,000	14.99
60,000	29.60
80,000	31.19
120,000	33.28
160,000	34.85
200,000	36.11
400,000	40.35
1,000,000	46.72

[40 CFR 52.126(b)(1)]

4. Permittee shall not cause to be discharged into the atmosphere any process fugitive emissions that exhibit greater than ten percent opacity.

[40 C.F.R. 60.382(b)]

B. Air Pollution Controls

At all times, including periods of startup, shutdown, and malfunction, Permittee shall, to the extent practicable, maintain and operate the truck dump baghouse, transfer point baghouse, leach tank scrubber, and the slurry tank scrubber associated with the flue dust leach circuit in a manner consistent with good air pollution control practices for minimizing particulate matter emissions.

[40 C.F.R. 60.11(d) and A.A.C. R18-2-331]

[Material permit condition denoted by underline]

C. Monitoring, Recordkeeping, and Reporting Requirements

1. Permittee shall calibrate, maintain, and operate a monitoring device for the continuous measurement of the change in pressure of a gas stream through the scrubbers. The monitoring device must be certified by the manufacturer to be accurate within ± 250 pascals (± 1 inch water) gauge pressure and must be calibrated on an annual basis in accordance with manufacturer instructions.

[40 C.F.R. 60.384(a)]

[Material permit condition denoted by underline]

2. Permittee shall install, calibrate, maintain, and operate a monitoring device for the continuous measurement of the scrubbing fluid flow rate in the scrubbers. The monitoring device must be certified by the manufacturer to be accurate within ± 5 percent of the design scrubbing liquid flow rate and must be calibrated on an annual basis in accordance with manufacturer instructions.

[40 C.F.R. 60.384(b)]

[Material permit condition denoted by underline]

3. On a weekly basis, Permittee shall record the measurements of both the change in the pressure of the gas stream across the scrubber and the scrubbing liquid flow rate.

[40 C.F.R. 60.385(b)]

4. Permittee shall submit semiannual reports to the Director of occurrences when the measurements of the scrubber pressure loss (or gain) and the liquid flow rate differ by more than ± 30 percent from the average obtained during the most recent performance test. The reports shall be postmarked within 30 days following the end of the second and fourth calendar periods.

[40 C.F.R. 60.385(c) & 40 C.F.R. 60.385(d)]

D. Testing

1. In the first year of the permit term, Permittee shall conduct performance tests

for particulate matter on all the stacks associated with the flue dust leach circuit and furnish the Director with a written report of the results of the tests.

[A.A.C. R18-2-306.A.3.c]

2. Permittee shall conduct an annual performance test for opacity on the converter roof vent. The performance test shall be conducted in accordance with Reference Method 9 in 40 CFR 60, Appendix A.

[A.A.C. R18-2-306.A.3.c]

3. If the facility is not operative in the first year, testing shall be performed in the subsequent year within the permit term when the facility resumes operation.

[A.A.C. R18-2-312.G and A.A.C. R18-2-306.A.2]

4. The performance test for Particulate Matter shall be conducted in accordance with Reference Method 5 or 17 in 40 CFR 60, Appendix A.

[40 C.F.R. 60.386(b)(1)]

5. During the performance test, Permittee shall use the monitoring devices to determine the pressure loss of the gas stream through the scrubbers and the scrubbing liquid flow rate at any time during each particulate matter run, and the average of the three determinations shall be computed.

[40 C.F.R. 60.386(c)]

E. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with 40 CFR 60.382(a)(1), 40 CFR 60.382(a)(2), 40 CFR 52.126(b)(1), 40 CFR 60.382(b), 40 CFR 60.384(a), 40 CFR 60.384(b), 40 CFR 60.385(b), 40 CFR 60.385(c), 40 CFR 60.385(d), 40 CFR 60.386(b)(1), and 40 CFR 60.386(c).

[A.A.C. R18-2-325]

XIV. Lime Plant

PM and Opacity

A. Emission Limitations/Standards

1. Permittee shall not cause, allow or permit the discharge of particulate matter into the atmosphere in any one hour in total quantities in excess of the amounts calculated by one of the following equation:
 - a. For process sources having a process weight rate of 60,000 pounds per hour (30 ton per hour) or less, the maximum allowable emissions shall be determined by the following equation:

$$E = 3.59P^{0.62}$$

where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour.

P = the process weight rate in tons-mass per hour

- b. For process sources having a process weight rate greater than 60,000 pounds per hour (30 ton per hour), the maximum allowable emissions shall be determined by the following equation:

$$E = 17.31P^{0.16}$$

where “E” and “P” are defined as indicated in paragraph (a) of this subsection.

[Arizona State Implementation Plan R9-3-520.A.2]

2. Permittee shall not cause, allow or permit to be emitted into the atmosphere, any plume or effluent which exceeds 40% opacity as measured by EPA Reference Method 9.

[A.A.C. R18-2-702.B]

B. Air Pollution Control Requirements

Permittee shall maintain and operate the four wet scrubbers associated with the limestone crusher, screen, and lime kiln for minimizing particulate matter emissions.

[A.A.C. R18-2-331]

[Material permit conditions are identified by underline]

C. Monitoring, Recordkeeping, and Reporting Requirements

1. Biweekly monitoring for point sources
- a. Within 180 days of issuance of this permit, Permittee shall conduct certified Method 9 performance tests in accordance with Section XVIII of Attachment A for the stacks associated with the lime plant, while operating at normal representative working conditions, to establish a baseline opacity level for each of the stacks. Within 30 days of establishing the baseline opacity, the Permittee shall report the results to the Director.
- b. A certified Method 9 observer shall conduct a bi-weekly (once in two weeks) visual survey of visible emissions from the stacks associated

with the lime plant when they are in operation. Permittee shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.

- c. If the observer sees a plume that on an instantaneous basis appears to exceed the baseline opacity level, then the observer shall, if possible, take a six-minute Method 9 observation of the plume.
- d. If the six-minute opacity of the plume is less than the baseline opacity level, the observer shall make a record of the following:
 - (1) Location, date, and time of the observation; and
 - (2) The results of the Method 9 observation.
- e. If the six-minute opacity of the plume exceeds the baseline opacity level but is less than the applicable opacity standard, Permittee shall adjust or repair the controls or equipment to reduce opacity to below the baseline opacity level. The observer shall make a record of the following:
 - (1) Name of the observer, location, date, and time of the observation;
 - (2) The results of the Method 9 observation;
 - (3) Date and time when corrective action was taken; and
 - (4) Type of corrective action taken.
- f. If the six-minute opacity of the plume exceeds the applicable opacity standard, then the Permittee shall do the following:
 - (1) Adjust or repair the controls or equipment to reduce opacity to below the baseline level; and
 - (2) Report it as an excess emission for opacity.
- g. If necessitated by the results of the bi-weekly monitoring, Permittee may reestablish the baseline opacity level(s). Reestablishment of the baseline(s) shall be performed utilizing the same procedures used in setting up the initial baseline level(s). Within 30 days of re-establishing the baseline opacity, the Permittee shall report the results to the Director. The report shall also contain a description of the need for re-establishing the baseline(s).

[A.A.C. R18-2-306.A.3.c]

2. Bi-weekly monitoring for fugitive emissions

- a. A certified Method 9 observer shall conduct a bi-weekly (once in two weeks) visual survey of fugitive emissions from the lime plant when they are in operation.
- b. If the observer, during the visual survey, does not see any plume from any fugitive source that on an instantaneous basis appears to exceed the applicable opacity standard, then the observer shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.
- c. If the observer sees a plume from a fugitive source that on an instantaneous basis appears to exceed the applicable opacity standard, then the observer shall if possible take a six-minute Method 9 observation of the plume.
- d. If the six-minute opacity of the plume exceeds the applicable opacity standard, Permittee shall do the following:
 - (1) Adjust or repair the controls or equipment to reduce opacity to below the opacity standard;
 - (2) Report it as excess emissions.
- e. If the six-minute opacity of the plume is less than the applicable opacity standard, the observer shall make a record of the following:
 - (1) Name of the observer, location, date, and time of the observation; and
 - (2) The results of the Method 9 observation.

[A.A.C. R18-2-306.A.3.c]

D. Performance testing requirements

1. In the first year of the permit term, Permittee shall conduct performance tests for particulate matter on the wet scrubber associated with the lime kiln and furnish the Director with a written report of the results of the test. The performance test for Particulate Matter shall be conducted in accordance with Reference Method 5 or 17 in 40 CFR 60, Appendix A.

[A.A.C. R18-2-306.A.3.c]
2. Permittee shall conduct an annual performance test for opacity on the lime

plant. The performance test shall be conducted in accordance with Reference Method 9 in 40 CFR 60, Appendix A. [A.A.C. R18-2-306.A.3.c]

E. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with 40 CFR 60.52.126(b)(1) and A.A.C R18-2-702.B. [A.A.C. R18-2-325]

XV. Flux Circuit

Particulate Matter and Opacity

A. Emission Limitations/Standards

1. Permittee shall not cause to be discharged into the atmosphere, any stack emissions that contain particulate matter in excess of 0.05 grams per dry standard cubic meter. [40 C.F.R. 60.672.(a)(1)]
2. Permittee shall not cause to be discharged into the atmosphere, any stack emissions that exhibit greater than 7 percent opacity unless a wet scrubbing emission control device is used. [40 C.F.R. 60.672.(a)(2)]
3. Permittee shall not cause to be discharged into the atmosphere any process fugitive emissions that exhibit greater than ten percent opacity. [40 C.F.R. 60.672.(b)]
4. Permittee shall not discharge or cause the discharge of particulate matter into the atmosphere in excess of the hourly rate shown in the following table for the process weight rate identified:

Process weight rate (pounds per hour)	Emission rate (pounds per hour)
50	0.36
100	0.55
500	1.53
1000	2.25
5000	6.34
10,000	9.73
20,000	14.99
60,000	29.60

Process weight rate (pounds per hour)	Emission rate (pounds per hour)
80,000	31.19
120,000	33.28
160,000	34.85
200,000	36.11
400,000	40.35
1,000,000	46.72

[40 CFR 52.126(b)(1)]

B. Air Pollution Controls

At all times, including periods of startup, shutdown, and malfunction, Permittee shall, to the extent practicable, maintain and operate the two baghouses associated with the flux circuit in a manner consistent with good air pollution control practices for minimizing particulate matter emissions.

[40 C.F.R. 60.11(d) and A.A.C. R18-2-331]

[Material permit condition denoted by underline]

C. Monitoring, Recordkeeping, and Reporting Requirements

1. Biweekly monitoring for point sources

- a. Within 180 days of issuance of this permit, Permittee shall conduct certified Method 9 performance tests in accordance with Section XVIII of Attachment A for the stacks associated with the flux circuit, while operating at normal representative working conditions, to establish a baseline opacity level for each of the stacks. Within 30 days of establishing the baseline opacity, the Permittee shall report the results to the Director.
- b. A certified Method 9 observer shall conduct a bi-weekly (once in two weeks) visual survey of visible emissions from the stacks associated with the flux circuit when they are in operation. Permittee shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.
- c. If the observer sees a plume that on an instantaneous basis appears to exceed the baseline opacity level, then the observer shall, if possible, take a six-minute Method 9 observation of the plume.
- d. If the six-minute opacity of the plume is less than the baseline opacity

level, the observer shall make a record of the following:

- (1) Location, date, and time of the observation; and
 - (2) The results of the Method 9 observation.
- e. If the six-minute opacity of the plume exceeds the baseline opacity level but is less than the applicable opacity standard, Permittee shall adjust or repair the controls or equipment to reduce opacity to below the baseline opacity level. The observer shall make a record of the following:
- (1) Name of the observer, location, date, and time of the observation;
 - (2) The results of the Method 9 observation;
 - (3) Date and time when corrective action was taken; and
 - (4) Type of corrective action taken.
- f. If the six-minute opacity of the plume exceeds the applicable opacity standard, then the Permittee shall do the following:
- (1) Adjust or repair the controls or equipment to reduce opacity to below the baseline level; and
 - (2) Report it as an excess emission for opacity.
- g. If necessitated by the results of the bi-weekly monitoring, Permittee may reestablish the baseline opacity level(s). Reestablishment of the baseline(s) shall be performed utilizing the same procedures used in setting up the initial baseline level(s). Within 30 days of re-establishing the baseline opacity, the Permittee shall report the results to the Director. The report shall also contain a description of the need for re-establishing the baseline(s).

[A.A.C. R18-2-306.A.3.c]

2. Bi-weekly monitoring for fugitive emissions

- a. A certified Method 9 observer shall conduct a bi-weekly (once in two weeks) visual survey of fugitive emissions from the flux circuit when in operation.
- b. If the observer, during the visual survey, does not see any plume from any fugitive source that on an instantaneous basis appears to exceed the applicable opacity standard, then the observer shall keep a record of the name of the observer, the date on which the observation was made, and

the results of the observation.

- c. If the observer sees a plume from a fugitive source that on an instantaneous basis appears to exceed the applicable opacity standard, then the observer shall if possible take a six-minute Method 9 observation of the plume.
- d. If the six-minute opacity of the plume exceeds the applicable opacity standard, Permittee shall do the following:
 - (1) Adjust or repair the controls or equipment to reduce opacity to below the opacity standard;
 - (2) Report it as excess emissions.
- e. If the six-minute opacity of the plume is less than the applicable opacity standard, the observer shall make a record of the following:
 - (1) Location, date, and time of the observation; and
 - (2) The results of the Method 9 observation.

[A.A.C. R18-2-306.A.3.c]

D. Testing

- 1. In the first year of the permit term, Permittee shall conduct performance tests for particulate matter on all the stacks associated with the flux circuit and furnish the Director with a written report of the results of the tests. The performance test for Particulate Matter shall be conducted in accordance with Reference Method 5 or 17 in 40 CFR 60, Appendix A.

[A.A.C. R18-2-312.G and A.A.C. R18-2-306.A.2]
- 2. Permittee shall conduct an annual performance test for opacity on the flux circuit. The performance test shall be conducted in accordance with Reference Method 9 in 40 CFR 60, Appendix A.

[A.A.C. R18-2-306.A.3.c]
- 3. If the facility is not operative in the first year, testing shall be performed in the subsequent year within the permit term when the facility resumes operation.

[A.A.C. R18-2-312.G and A.A.C. R18-2-306.A.2]

E. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with 40 CFR 60.672(a)(1), 40 CFR 60.672(a)(2), and 40 CFR 60.672(b).

[A.A.C. R18-2-325]

XVI. General Provisions for Continuous Monitoring Systems

- A. All the COMS referenced in this permit shall meet the following quality assurance requirements: [A.A.C. R18-2-306.A.3.c]

1. Calibration checks

Permittee shall check the zero (or low-level value between 0 and 20% of span value) and span (50 to 100 percent of span value) calibration drifts at least once daily in accordance with a written procedure. [40 CFR 60.13(d)(1)]

2. Zero and span drift adjustments

- a. The zero and span shall, as a minimum, be adjusted whenever the 24-hr zero drift or 24-hr span drift exceeds two times the limits of the applicable performance specifications in Appendix B of 40 CFR 60.
- b. The system must allow for the amount of excess zero and span drift measured at the 24-hour interval checks to be recorded and quantified.
- c. The optical surfaces exposed to the effluent gases shall be cleaned prior to performing the zero and span drift adjustments, except for systems using automatic zero adjustments.
- d. For systems using automatic zero adjustments, the optical surfaces shall be cleaned when the cumulative automatic zero compensation exceeds 4% opacity.

[40 CFR 60.13(d)(1)]

3. System checks

Permittee shall, as minimum procedures, apply a method for producing a simulated zero opacity condition and an upscale (span) opacity condition using a certified neutral density filter or other related technique to produce a known obscuration of the light beam. All procedures applied shall provide a system check of the analyzer internal optical surfaces and all electronic circuitry including the lamp and photodetector assembly. [40 CFR 60.13(d)(2)]

4. Minimum frequency of operation

Except during periods of system breakdowns, repairs, calibration checks, and zero and span adjustments, the COMS shall be in continuous operation and shall complete a minimum of one cycle of sampling and analyzing for each

successive 10-second period and one cycle of data recording for each successive 6-minute period. [40 CFR 60.13(e)(1)]

5. Data reduction procedures

- a. Permittee shall reduce all data from the COMS to 6-minute averages. Six-minute opacity averages shall be calculated from 36 or more data points equally spaced over each 6-minute period.
- b. Data recorded during periods of system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages computed under the previous paragraph. An arithmetic or integrated average of all data may be used.

[40 CFR 60.13(h)]

B. The SO₂ CEMS shall meet the following quality assurance requirements:

1. Calibration drift checks

Permittee shall check the zero (or low-level value between 0 and 20% of span value) and span (50 to 100 percent of span value) calibration drifts (CD) at least once daily in accordance with a written procedure prescribed by the manufacturer.

[40 CFR 60.13(d)(1)]

2. Zero and span drift adjustments

- a. The zero and span shall, as a minimum, be adjusted whenever the 24-hr zero drift or 24-hr span drift exceeds two times the limits of the applicable performance specifications in Appendix B of 40 CFR 60.

[40 CFR 60.13(d)(1)]

- b. The CEMS shall allow for the amount of excess zero and span drift measured at the 24-hour interval checks to be recorded and quantified.

[40 CFR 60.13(d)(1)]

3. Minimum frequency of operation

Except during periods of system breakdowns, repairs, calibration checks, and zero and span adjustments, the CEMS shall be in continuous operation and shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

[40 CFR 60.13(e)(2)]

4. Data reduction procedures
 - a. Permittee shall reduce all data from the CEMS to 1-hour averages. The 1-hour averages shall be computed from four or more data points equally spaced over each 1-hour period.
 - b. Data recorded during periods of system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages computed under the previous paragraph. An arithmetic or integrated average of all data may be used. The data may be recorded in reduced or nonreduced form.

[40 CFR 60.13(h)]

C. Recordkeeping and Reporting Requirements for Continuous Monitoring Systems

1. Permittee shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility under this Section; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is in operative.

[40 CFR 60.7(b)]
2. Permittee shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by this section recorded in a permanent form suitable for inspection. The file shall be retained for at least five years following the date of such measurements, maintenance, reports and records.

[40 CFR 60.7(f) and A.A.C. R18-2-306(A)(4)(b)]

3. Quarterly excess emissions and monitoring systems performance reports
 - a. Permittee shall submit an excess emissions and monitoring systems performance (MSP) report and/or a summary report form to the Department for every calendar quarter, unless the total duration of excess emissions for the reporting period is less than 1 percent of the total operating time for the reporting period and the continuous monitoring system downtime for the reporting period is less than 5 percent of the total operating time for the reporting period, in which case only the summary report form shall be submitted and the excess emissions report need not be submitted unless requested by the Department. All quarterly reports shall be postmarked by the 30th day

following the end of each calendar quarter. [40 CFR 60.7(c) and (d)]

- b. The summary report form submission required in the preceding paragraph shall be in the format specified in 40 CFR 60.7(d). Each excess emission and MSP report shall include the following information: [40 CFR 60.7(c)]
 - (1) The magnitude of excess emissions computed, any conversion factor(s) used, and the date and time of commencement and completion of each time period of excess emissions. The process operating time during the reporting period.
 - (2) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the affected facility. The nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.
 - (3) The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments.
 - (4) When no excess emissions have occurred or the continuous monitoring system(s) have not been inoperative, repaired, or adjusted, such information shall be stated in the report.

XVII. Non Point Sources

A. Emission Limits/Standards

- 1. Open Areas, Roadways & Streets, Storage Piles, and Material Handling
 - a. Permittee shall not cause, allow or permit visible emissions from open areas, roadways and streets, storage piles or material handling in excess of 40% opacity measured in accordance with the Arizona Testing Manual, Reference Method 9. Open fires permitted under A.A.C. R18-2-602 are exempt from this requirement. [A.A.C. R18-2-610]
 - b. Permittee shall employ the following reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne:

- (1) Keep dust and other types of air contaminants to a minimum in an open area where construction operations, repair operations, demolition activities, clearing operations, leveling operations, or any earth moving or excavating activities are taking place, by good modern practices such as using an approved dust suppressant or adhesive soil stabilizer, paving, covering, landscaping, continuous wetting, detouring, barring access, or other acceptable means;
[A.A.C. R18-2-604.A]
- (2) Keep dust to a minimum from driveways, parking areas, and vacant lots where motor vehicular activity occurs by using an approved dust suppressant, or adhesive soil stabilizer, or by paving, or by barring access to the property, or by other acceptable means;
[A.A.C. R18-2-604.B]
- (3) Keep dust and other particulates to a minimum by employing dust suppressants, temporary paving, detouring, wetting down or by other reasonable means when a roadway is repaired, constructed, or reconstructed;
[A.A.C. R18-2-605.A]
- (4) Take reasonable precautions, such as wetting, applying dust suppressants, or covering the load when transporting material likely to give rise to airborne dust;
[A.A.C. R18-2-605.B]
- (5) Take reasonable precautions, such as the use of spray bars, wetting agents, dust suppressants, covering the load, and hoods when crushing, handling, or conveying material likely to give rise to airborne dust;
[A.A.C. R18-2-606]
- (6) Take reasonable precautions such as chemical stabilization, wetting, or covering when organic or inorganic dust producing material is being stacked, piled, or otherwise stored;
[A.A.C. R18-2-607.A]
- (7) Operate stacking and reclaiming machinery utilized at storage piles at all times with a minimum fall of material, or with the use of spray bars and wetting agents;
[A.A.C. R18-2-607.B]
- (8) Take reasonable precautions such as the use of dust suppressants before the cleaning of site, roadway, or alley. Earth or other material shall be removed from paved streets onto which earth or other material has been transported by

trucking or earth moving equipment, erosion by water or by other means; or [A.A.C. R18-2-804.B]

- (9) Any other method as proposed by Permittee and approved by the Director. [A.A.C. R18-2-306.A.3.c]

2. Open Burning

Except as provided in A.A.C. R18-2-602.C(1), C(3), and C(4), and except when permitted to do so by either ADEQ or the local officer delegated the authority for issuance of open burning permits, Permittee shall not conduct open burning.

[A.A.C. R18-2-602]

B. Monitoring, Recordkeeping and Reporting Requirements

1. Open Areas, Roadways & Streets, Storage Piles and Material Handling

Permittee shall maintain records of the dates on which any of the activities listed in XVII.A.1.b(1) through (9) of this section were performed and control measures adopted. [A.A.C. R18-2-306.A.3.c]

2. Bi-weekly Monitoring Requirement

- a. Within 90 days of issuance of this permit, Permittee shall submit a visual observation plan to be approved by the Department. The observation plan shall identify a central lookout station or multiple observation points, as appropriate, from where the non point sources shall be monitored. When multiple observation points are used, all the non point sources associated with each observation point shall be specifically identified within the observation plan.
- b. The certified Method 9 observer shall conduct a bi-weekly (once in two weeks) visual survey of visible emissions from the non-point sources when they are in operation in accordance with the observation plan. Permittee shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.
- c. If the observer sees a plume from a non-point source that on an instantaneous basis appears to exceed 40%, then the observer, shall if possible, take a six-minute Method 9 observation of the plume.

- d. If the six-minute opacity of the plume is less than 40%, the observer shall make a record of the following:
 - (1) Location, date, and time of the observation; and
 - (2) The results of the Method 9 observation.
 - e. If the six-minute opacity of the plume exceeds 40%, then the Permittee shall do the following:
 - (1) Adjust or repair the controls or equipment to reduce opacity to below 40%; and
 - (2) Report it as an excess emission under Section XI.A of Attachment "A".
 - f. Any changes to the observation plan, originally approved by the Department, shall be made only with the prior approval of the Director.
[A.A.C. R18-2-306.A.3.c]
3. Open Burning

The monitoring requirements for Section XVII.A.2 of this attachment may be complied with by maintaining copies of all open burning permits on file.
[A.A.C. R18-2-306.A.3.c]

C. Permit Shield

Compliance with the conditions of this part shall be deemed compliance with A.A.C. R18-2-602, A.A.C. R18-2-604.A, A.A.C. R18-2-604.B, A.A.C. R18-2-605, A.A.C. R18-2-606, A.A.C. R18-2-607, A.A.C. R18-2-610, and A.A.C. R18-2-804.B.
[A.A.C. R18-2-325]

XVIII. Other Periodic Activities

A. Abrasive Blasting

- 1. Opacity of Visible Emissions
 - a. Permittee shall not cause, allow or permit visible emissions from sandblasting or other abrasive blasting operations in excess of 40% opacity as measured by EPA Reference Method 9.
[A.A.C. R18-2-702.B]
 - b. The Permittee shall not cause or allow sandblasting or other abrasive

blasting without minimizing dust emissions to the atmosphere through the use of good modern practices. Good modern practices include:

- (1) wet blasting;
- (2) effective enclosures with necessary dust collecting equipment;
or
- (3) any other method as approved by the Director.

[A.A.C. R18-2-726]

2. Monitoring, Recordkeeping, and Reporting Requirements

[A.A.C. R18-2-306.A.3.c]

Each time an abrasive blasting project is conducted, the Permittee shall log in ink or in an electronic format, a record of the following:

- a. The date the project was conducted;
- b. The duration of the project; and
- c. Type of control measures employed.

3. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C.R18-2-702.B and A.A.C.R18-2-726.

[A.A.C. R18-2-325]

B. Use of Paints

1. Opacity of Visible Emissions

Emission Limitations/Standards

A visible plume or effluent from spray painting operations shall not have an opacity greater than 40%, measured in accordance with by EPA Reference Method 9.

[A.A.C.R18-2-702.B]

2. Volatile Organic Compounds

a. Emission Limitations/Standards

While performing spray painting operations the Permittee shall comply with the following requirements:

- (1) The Permittee shall not conduct any spray painting operation without minimizing organic solvent emissions. Such operations

other than architectural coating and spot painting, shall be conducted in an enclosed area equipped with controls containing no less than 96 percent of the overspray.

[A.A.C.R18-2-727.A]

- (2) The Permittee shall not either:
- (a) Employ, apply, evaporate or dry any architectural coating containing photochemically reactive solvents for industrial or commercial purposes; or
 - (b) Thin or dilute any architectural coating with a photochemically reactive solvent. [A.A.C.R18-2-727.B]
- (3) For the purposes of parts (2) and (5) of this condition, a photochemically reactive solvent shall be any solvent with an aggregate of more than 20 percent of its total volume composed of the chemical compounds classified in paragraphs (a) through (c) of this subsection, or which exceeds any of the following percentage composition limitations, referred to the total volume of solvent:
- (a) A combination of the following types of compounds having an olefinic or cyclo-olefinic type of unsaturation - hydrocarbons, alcohols, aldehydes, esters, ethers, or ketones : five percent
 - (b) A combination of aromatic compounds with eight or more carbon atoms to the molecule except ethylbenzene: eight percent
 - (c) A combination of ethylbenzene, ketones having branched hydrocarbon structures, trichloroethylene or toluene: 20 percent [A.A.C.R18-2-727.C]
- (4) Whenever any organic solvent or any constituent of an organic solvent may be classified from its chemical structure into more than one of the groups or organic compounds described in subsection 3(a) through 3(c) of this condition, it shall be considered to be a member of the group having the least allowable percent of the total volume of solvents. [A.A.C.R18-2-727.D]
- (5) The Permittee shall not dispose by evaporation more than 1.5 gallons of photochemically reactive solvent in any one day. [SIP Provision R9-3-527.C]

b. Monitoring, Recordkeeping, and Reporting Requirements

[A.A.C. R18-2-306.A.3.c]

- (1) Each time a spray painting project is conducted, the Permittee shall log in ink or in an electronic format, a record of the following:
 - (a) The date the project was conducted;
 - (b) The duration of the project;
 - (c) Type of control measures employed; and
 - (d) Material Safety Data Sheets for all paints and solvents used in the project.
- (2) Architectural coating and spot painting projects shall be exempt from the recordkeeping requirements of part (1) above.

3. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C.R18-2-727 and SIP Provision R9-3-527.C. [A.A.C. R18-2-325]

C. Mobile Sources

The requirements of this condition are applicable to mobile sources which either move while emitting air contaminants or are frequently moved during the course of their utilization but are not classified as motor vehicles, agricultural vehicles, or are agricultural equipment used in normal farm operations. Mobile sources shall not include portable sources as defined in A.A.C. R18-2-101.84. [A.A.C. R18-2-801]

1. Emission Limitations/Standards for Roadway and Site Cleaning Machinery

Permittee shall not cause, allow or permit to be emitted into the atmosphere from any roadway and site cleaning machinery smoke or dust for any period greater than ten consecutive seconds, the opacity of which exceeds 40 percent. Visible emissions when starting cold equipment shall be exempt from this requirement for the first ten minutes. [A.A.C. R18-2-804.A]

2. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C. R18-2-801 and A.A.C. R18-2-804.A. [A.A.C. R18-2-325]

D. Demolition/Renovation

1. Emission Limitations/Standards

The Permittee shall comply with the applicable requirements of 40 CFR 61, Subpart M (National Emissions Standards for Hazardous Air Pollutants - Asbestos).

[A.A.C.R18-2-1101.A.8]

2. Monitoring, Recordkeeping, and Reporting Requirements

[A.A.C. R18-2-306.A.3.c]

Permittee shall keep all required records in a file. The required records include the “NESHAP Notification for Renovation and Demolition Activities” form and all supporting documents.

E. Nonvehicle Air Conditioner Maintenance and/or Services

1. Emission Limitations/Standards

The Permittee shall comply with the applicable requirements of 40 CFR 82 - Subpart F (Protection of Stratospheric Ozone - Recycling and Emissions Reduction).

[40 CFR 82, Subpart F]

2. Monitoring, Recordkeeping, and Reporting Requirements

[A.A.C. R18-2-306.A.3.c]

Permittee shall keep all records required by the applicable requirements of 40 CFR 82 - Subpart F in a file.

XIX. Miscellaneous Storage Tanks

Volatile Organic Compounds

A. Emission Limitations/Standards

1. Permittee shall not cause the emission of gaseous or odorous materials in such quantities or concentrations as to cause air pollution. [A.A.C. R18-2-730.D]
2. Materials including solvents or other volatile compounds, acids, and alkalis shall be processed, stored, used, and transported in such a manner and by such means that they will not evaporate, leak, escape or be otherwise discharged into the ambient air so as to cause or contribute to air pollution. Where means are available to reduce effectively the contribution to air pollution from

evaporation, leakage, or discharge, the installation and use of such control methods, devices, or equipment shall be mandatory. [A.A.C. R18-2-730.F]

3. Where a stack, vent or other outlet is at such a level that fumes, gas, mist, odor, smoke, vapor, or any combination thereof constituting air pollution is discharged to adjoining property, the Director may require the installation of abatement equipment or the alteration of such stack, vent or other outlet by the Permittee thereof to a degree that will adequately dilute, reduce or eliminate the discharge of air pollution to the adjoining property.

[A.A.C. R18-2-730.G]

B. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C. R18-2-730.D, A.A.C. R18-2-730.F, and A.A.C. R18-2-730.G [A.A.C. R18-2-325]

XX. Ambient Sulfur Dioxide Monitors

- A. The primary ambient air quality standards for sulfur oxides, measured as sulfur dioxide, are:

1. 80 micrograms per cubic meter (0.03 ppm) -- annual arithmetic mean.
2. 365 micrograms per cubic meter (0.14 ppm) -- maximum 24-hour concentration not to be exceeded more than once per year.

[A.A.C. R18-2-202.A]

- B. The secondary ambient air quality standard for sulfur oxides, measured as sulfur dioxide, is 1300 micrograms per cubic meter (0.5 ppm) -- maximum 3-hour concentration not to be exceeded more than once per year. [A.A.C. R18-2-202.B]

C. Monitoring Requirements

1. Permittee shall continue to calibrate, maintain and operate at a minimum, the following ambient sulfur dioxide monitoring equipment:

Ambient Monitor	Latitude	Longitude
Town site	32' 36" 07 N	110' 36" 04 W
Dorm site	32' 36" 63 N	110' 38" 08 W
Hospital site	32' 36" 74 N	110' 37" 75 W

[A.A.C. R18-2-306.01]

2. Only those methods which have been either designated by USEPA as reference or equivalent methods or approved by the Director shall be used to monitor ambient air. [A.A.C. R18-2-215(A)]
3. Quality assurance, monitor siting, and sample probe installation procedures shall be in accordance with procedures described in the Appendices to 40 CFR 58. [A.A.C. R18-2-215(B)]
4. The Director may approve other procedures upon a finding that the proposed procedures are substantially equivalent or superior to procedures in the Appendices to 40 CFR 58. [A.A.C. R18-2-215(C)]
5. Unless otherwise specified, interpretation of all ambient air quality standards contained in this Section shall be in accordance with 40 CFR 50. [A.A.C. R18-2-216(A)]
6. The evaluation of air quality data in terms of procedure, methodology, and concept is to be consistent with methods described in A.A.C. Title 18, Chapter 2, Appendix 10, "Evaluation of Air Quality Data". [A.A.C. R18-2-216(B)]

D. Violations

1. Each exceedance of the annual SO₂ standard, as specified in paragraph A.1. of this Section, at each monitoring site shall constitute a violation of the standard. [A.A.C. R18-2-219(C)(1)]
2. One exceedance per year of the SO₂ standards prescribed in paragraphs A.2 and B of this Section shall be allowed at each monitoring site. Each additional exceedance of the standards at each site shall constitute a violation of the standards. [A.A.C. R18-2-219(A) and (B)]

E. Permit Shield

Compliance with the terms of this section shall be deemed compliance with A.A.C. R18-2-202, A.A.C. R18-2-2-215, A.A.C. R18-2-216, A.A.C. R18-2-219.A, A.A.C. R18-2-219.B, and A.A.C. R18-2-219.C.1. [A.A.C. R18-2-325]

BHP - San Manuel Smelter Operations**ATTACHMENT "C"****EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES ***

EMISSION POINT (1)	SOURCE NAME(2)	SO2 (3)		PM10 (4)		Pb(5)		As(6)		Hg(7)	
		#/hr	T/Y	#/hr	T/Y	#/hr	T/Y	#/hr	T/Y	#/hr	T/Y
1	Acid Plant Tail gas Stack II	357	1564	7.48	32.76	0.0015	0.0066	0.001	0.0044	0.0005	0.0022
2	Acid Plant Tail gas Stack III	200	876	3.00	13.14	0.0015	0.0066	0.001	0.0044	0.0005	0.0022
3	Flash Furnace Fugitive Stack	485	2124	15.77	69.07	0.781	3.421	0.2230	0.9767	0.0030	0.0131
4	Converter Secondary Hood Gas Stack	1496	6552	11.29	49.45	0.671	2.939	0.1170	0.5125	0.0030	0.0131
5	Dryer Exhaust Stack	473	2073	7.97	39.91	0.059	0.2598	0.0443	0.1940	0.0051	0.0223
						1.514	6.633	0.3863	1.692	0.0121	0.0529
6	Converter Roof Monitor (Fugitives)	1115	4884	2.14	9.37						
	Emission Cap	4126	18073								

- (1). Emission point identification - either specific equipment designation or emission point number from the plot plan
 (2). Specific point source name. For fugitive sources use area name or fugitive source name
 (3). Sulfur Dioxide. #/hr emissions are annual averages over the preceding 12 months, calculated monthly from CEM data
 (4). Particulate matter < 10 micron
 (5). Lead
 (6). Arsenic
 (7). Mercury
- * Emission rates are based on the following operating schedule: Hours/day____Days/week____Weeks/year____Hours/year: 8760

ATTACHMENT "D":SULFUR BALANCE METHODOLOGY**Air Quality Control Permit No. 1000047
For
BHP Copper, San Manuel Smelting Operations****Calculating Input Sulfur**

All sulfur bearing concentrates that arrive at the BHP Copper facility are analyzed for percent sulfur content. A composite breakdown of sulfur and other impurities is reported on a monthly basis by BHP's Metallurgical Department in a monthly concentrate report. Sulfur content is recorded in both wet and dry tons. Reported values for sulfur content with the silica (flux) and lime used to blend with the copper/sulfur bearing concentrates are both zero. This zero value was attained by thorough review of past sampling of these materials. The analytical data available for this sampling shows that the amounts of sulfur that are present in these materials is not significant enough to impact the sulfur balance, therefore the assumed value is zero.

Aside from the concentrate/flux mix that is fed to the flash furnace, there are recycled loads of both converter and flash furnace flue dusts and slag. Other miscellaneous materials such as cement copper, brick fines, matte chips and reverts are also added.

Material Weight

All sulfur bearing materials, other than fuel that may contain sulfur, are weighed by various analytical devices at the BHP facility and recorded. Material weights is the first step in the sulfur balance process that BHP utilizes.

Weight Determination

In accordance with this Appendix's guidelines, all materials weight are determined on either a belt, rail or truck scale, or other weighing device. The following is a brief description of the equipment and procedures employed by BHP:

Concentrate Truck Scale: All concentrates arriving at the San Manuel facility via truck are weighed on a Rice-Lake IQ 700 Digital Indicator, Southwestern Scale - Electronic Scale Weighbridge. Accuracy of this device is maintained to State of Arizona requirements of +/-0.2% or better. This device is tested weekly in-house with a certified 20,960 lb test weight. The scale is tested quarterly by the Toledo Scale Company and once a year by the Arizona Department of Weights and Measures.

Acid Truck Scale: All acid shipments leaving the BHP facility are weighed on a Rice-Lake IQ 700 Digital Indicator, Southwestern Scale - Electromechanical Pit Scale. The accuracy of this device is maintained to State of Arizona requirements of $\pm 0.2\%$ or better. This device is tested weekly in-house with a certified 20,960 lb test weight. The scale is tested quarterly by the Toledo Scale Company and once a year by the Arizona Department of Weights and Measures.

Railroad Track Scale: All concentrates arriving, acids or copper leaving this BHP facility via rail are weighed using the railroad track scale. The 60 foot railroad track scale is an electro-mechanical static scale with a consolidated control UMC 2000 digital indicator. The 40 foot railroad track scale is an electronic static scale with a consolidated control UMC 2000 digital indicator. Both scales are tested in house on a weekly basis with a certified 101,300 pound test car. The scales are tested yearly by Southern Pacific transportation and also the State of Arizona Department of Weights and Measures. Accuracy of these devices are maintained to State requirements of $\pm 0.2\%$ or better.

Refinery Anode Scale: All anodes cast in the smelter area are weighed prior to their being moved to the tankhouse for refining. The refinery anode scale is an electronic static scale with a UMC 2000 digital indicator. This scale is tested twice a shift with a certified 20120 pound test weight by the operators on duty. A weekly test and inspection is performed by electronic technical personnel. Quarterly testing is performed by the Toledo Scale Company. The scale is also tested yearly by the State of Arizona Department of Weights and Measures and an accuracy is maintained to State requirements of $\pm 0.2\%$ or better.

22F Concentrate Feed Scale: All concentrate material being fed into the flash furnace is weighed across a belt scale after being dried. The flash furnace concentrate feed belt scale is a four Idler electronic belt scale with a digital electronic indicator. This scale is tested approximately once a month using calibration test weight bars which have been referenced to material truck tests across a static scale. Accuracy for this type of scale is typically $\pm 0.5\%$.

The following controlled systems allow BHP operational personnel to track usage or in-process materials on a minute to minute basis. By tracking the rates of usage of different materials, BHP can accurately estimate total tonnage of copper/sulfur bearing materials smelted in a given period.

Accuracy of Weight Determination (Scales)

As has been previously stated, accuracy of all of these weigh scales is maintained to at least $\pm 0.5\%$ or better. In most cases the accuracy is actually $\pm 0.2\%$ or better.

These levels far exceed the criteria of +/-5% or better that is set forth in Appendix 8 guidelines.

Calibration of Weighing Devices

As has been previously stated, all the weight determining devices are calibrated at least monthly, and in many cases more often than that. BHP maintains a record of all calibration activities.

Sulfur Bearing Materials

Sulfur bearing materials subject to being weighed shall include but not be limited to concentrate, cement copper, scrap copper, reverts which are discarded and not part of the internal circulating load and precipitates. Materials such as limestone and silica flux which are mixed with a charge of sulfur bearing materials shall be weighed and reported.

Sulfur Content (Incoming Sulfur Bearing Materials)

BHP utilizes a metallurgical and analytical method for determination of the sulfur content within materials fed into the smelter process. The following is a description of the sampling, preparation and analysis for sulfur content in these materials.

Sampling

BHP employs several different sampling methods for collection of samples in sulfur bearing materials dependent upon the type of material in question. The method of sampling is also dependent upon the type of vehicle or distribution system involved in moving the material at the facility.

Beltfeed (Concentrate Samples)

Samples are taken once a shift (3 x day) at the #146 Drag Chain, after the concentrates have been fed to the dryer and prior to being mixed with any fluxing agents. Approximately a two pound sample is manually pulled through a 4-inch pipe covered with a removable nipple. Samples are also taken once a day at the individual concentrate bins. These samples are taken manually (grab samples) and approximately two pounds of concentrate is removed.

Railcar

Concentrate: The sampling of concentrate deliveries via railcars is achieved by the following method. Once the railcars arrive onsite they are immediately weighed and

ticketed by BHP operations personnel. The cars are separated into groupings of five cars per lot or dependent upon the number, no less than three to a grouping and no more than five, for creation of a composite sample. In each railcar a drill auger is used to collect samples. The auger is drilled to the base of railcar in four separate sections of the car. Each time the auger is removed concentrate is sampled from each of the different flights on the auger. The sample is collected in a 12 x 18 plastic bag (this contains approximately 8,000 grams of sample). The sample is then taken for drying and weighing.

Miscellaneous: Materials other than concentrate that arrive by rail for smelting, such as scrap or cement copper from an outside facility, are sampled prior to the material being shipped to the BHP facility. Once BHP has analyzed the proposed smelter feed and determined it to have beneficial copper value, it can then be shipped to the site. Upon arrival of the material at the BHP facility it is sampled by BHP personnel by taking grab samples at arbitrary points and consolidating them into a composite. If the BHP sample disagrees with the submitted sample a portion of the composite is held for a third party umpire to make the final decision.

Truck

Concentrate: The sampling of concentrate deliveries via truck is very similar to that of railcar except that the trucks are placed into groupings of 15 trucks for each composite sample to be completed. Six separate drill holes are made in each truck shipment. Concentrate is sampled from each flight of the drilling auger into a 12 x 18 plastic bag (approximately 8,000 grams). This sample is then taken for drying and weighing.

Miscellaneous: Materials other than concentrate that arrive by truck for smelting, such as scrap or cement copper from an outside facility, are sampled prior to the material being shipped to the BHP facility. Once BHP has analyzed the proposed smelter feed and determined it to have beneficial copper value, it can then be shipped to the site. Upon arrival of the material at the BHP facility it is sampled by BHP personnel by taking grab samples at arbitrary point and consolidating them into a composite. If the BHP sample disagrees with the submitted sample a portion of the composite is held for a third party umpire to make the final decision.

Sample Preparation

Concentrates: Samples taken from both the railcars and trucks are handled in very similar fashion. The only difference is that the railcar samples are split using a 12 position splitting device whereas the truck samples are split with a 10 position device. Also, as previously stated, with the railcars, five railcars are used to make up a lot for composite sample preparation whereas 15 trucks are used for making up

a lot in the case of truck sample preparation. This causes a change in the amounts taken from each individual truck sample of 8,000 grams to create the 2,500 gram composite sample. Each sample is prepared in the same manner with the ticket weights of the truck or car used to compute the percentage of sample needed for the 2,500 grams composite sample.

Miscellaneous: Miscellaneous copper bearing materials are sampled in the same fashion as anode copper that is produced as a final product of the smelting process.

Crushing (Concentrate Samples)

Samples taken (approximately 8,000 grams) are dried for approximately 12 hours at about 105°C. The exact weight is then determined. This sample is placed in a clean 1 square foot blending box along with steel balls and allowed to blend/rotate for approximately 30 minutes (or until the sample is broken up). From this sample exactly 1,000 grams is taken for use in the composite. The 3-5 (railcar) or 12-15 (truck) samples that will be used for creation of the composite are taken and with the ticket weights of the deliveries it is determined how much is needed from each sample to create a 2,500 gram composite sample. Thus, the composite represents the railcars/trucks that they came from in exactly the proportionate amounts that were delivered.

Splitting (Concentrate Samples)

The 2,500 grams composite sample is taken and blended for a period of 30 minutes in a blending jar. From this sample 500 grams is taken and held as an unground sample (either filed or used for other miscellaneous tests if needed). The 2,000 grams remaining are blended for 20 minutes and split using a rotating splitter that splits the sample into 12 different positions (railcars) or 10 different positions (trucks).

Pulverization (Concentrate Samples)

From the 12 or 10 position splitter, cups 1, 5 and 9 are taken to be used as the final sample. This final sample is placed in a grinder where it is reduced to approximately minus 200 mesh in size.

Final Blending (Concentrate Samples)

This final sample of 500 grams (railcars) or 600 grams (trucks) is taken and blended in a blending jar for another 30 minute period. After final blending the sample is split 12 or 10 ways and placed into sealed envelopes. Of these sealed envelopes, up to four are sent to the shipper, two are held for umpire, one is sent to the smelter lab

for sulfur analysis, one is sent to Quality Control for copper analysis, one is sent to Quality Assurance for Ag, Au and other impurities analysis and the remaining envelopes are filed in case they are needed at a later time or if one of the samples is lost or contaminated in the analytical process.

Final Concentrate Sample

The final sample used from the composite 2,500 gram original samples is 500 grams in the case of the railcar samples and 600 grams in the case of the truck samples.

Sample Analysis

The type of analytical method used is dependent upon the sample type and matrix. BHP laboratory personnel employ rigorous Quality Assurance/Quality Control guidelines in the analytical procedures they use.

Sulfur Content Analysis

The determination of sulfur content within the concentrates smelted at San Manuel is a two part process. A preliminary sulfur determination is performed on a LECO Titrator - Model 532. The results of this preliminary test decide the level setting to be used for the following analysis by the X-ray machine; ARL-74,000. This X-ray machine is the same device used for the analysis of sulfur in the matte and slag samples to be discussed later in this text.

Copper Content Analysis (Concentrates)

Copper concentrates are analyzed for copper content using the short Iodide method. These results are used for Quality Control of arriving copper products and are compiled in the Composite Report for Total Copper Bearing Concentrate.

Fuel Sulfur Content Analysis

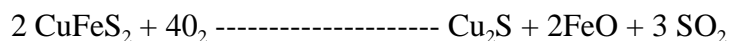
BHP currently uses some natural gas to augment the flash furnace process; natural gas in the converting process; and at times adds a small amount of coke to the converting process to enhance the heating adiabatically. The sulfur content found in both the coke and natural gas is very insignificant in relation to the entire sulfur balance process, therefore, BHP disregards any sulfur content associated with these materials.

Calculating Removed Sulfur

The calculation of total removed sulfur is the sum of the removed sulfur from each of the following product/waste streams. The methods used for obtaining, preparing and analyzing each sample differ due to sample matrix.

Flash Furnace and Converter Slags

The flash furnace technique and subsequent converting process employed by BHP produces an iron rich slag as a byproduct. The following chemical reaction shows the formation of the Iron (II) Oxide in the flash process:



This slag is a product of the copper concentrate and SiO_2 (silica) added to the process to convert the Iron (II) Oxide into a slag.

Scale Weight of Slags

The molten slag material is poured off into large slag pots that can be transported either by crane or by a Kress hauler. The slag pots are uniform in size and generally filled to a standard level. The total tonnage of slag produced for a given period of time is calculated as follows:

Composite concentrate iron analysis taken for that period of time.

Composite or estimated iron analysis on other copper bearing materials taken for that time period.

Total tonnage of all materials smelted or placed in the converters is taken and multiplied by the respective composite analysis.

Total tonnage for iron calculated from the iron balance is used to determine the slag production for that period, based upon the percent iron shown in the analytical reports for the slag during that period of time.

From this iron to slag balance an average weight per slag pot is determined over the given period of time. This method of slag tonnage determination is accurate to +/- 5%

Sampling (Flash & Converter Slags)

Flash slag samples are taken directly below that slag taps in the furnace at the slag launders. The flash furnace is set up so that slag can be removed from the process by punching a hole in the side of the furnace at specified points. From the punched hole the slag is allowed to flow out into launders where it is conveyed to slag pots below the furnace floor. It is at this drop point that sampling of the slag occurs. A worker pulls a slag sample by means of a stainless steel sampling mold attached to a 10-foot long metal pole. This mold captures the slag and is pulled away for

cooling. When cool the sample is removed by separating the two-pieced mold to expose a small slag ingot about 2-3 pound. This sample is taken to the nearby smelter lab.

Converter slag samples are taken directly from the converters as they pour out into the slag ladles. When a converter is ready to skim the slag off, the converter controller will arrange for a slag ladle to be placed directly below the mouth opening of the converter by the crane operator. The converter will then be rotated so that the mouth tilts towards a horizontal position, thus allowing the slag to skim or flow off of the top. As the slag flows from the converter mouth into a slag pot a worker will obtain a sample by use of a ten foot long metal pole with a stainless steel sampling mold (the same as used in the flash furnace slag sampling). The mold is allowed to cool and then the ingot is cooled and the 2-3 pound sample is taken to the smelter lab for analysis.

Analytical Procedure (Flash and Converter Slags)

The analytical method utilized for sulfur content in slag samples is the same used for sulfur content in concentrates: The determination of sulfur content within the concentrates smelted at San Manuel is a two part process. A preliminary sulfur determination is performed on a LECO Titrator - Model 532. The results of this preliminary test decide the level setting to be used for the following analysis by the X-ray machine; ARL-74,000. This X-ray machine is the same device used for the analysis of sulfur in the matte and slag samples to be discussed later in this text.

Boiler, Converter and Flash Furnace Dusts

Dusts produced in the flash furnace and subsequent converting operations contain up to 24 to 28% copper. These dusts are collected with the flash furnace precipitators, flash fugitive gas precipitator, converter stub flues, converter fugitive precipitator and waste heat boiler. All flash dusts are pneumatically conveyed to the flash furnace bin and recycled into the furnace. The converter dust, flash furnace fugitive dust and converter fugitive dust are loaded onto a dust truck from the smelter gas handling system and transported back into the concentrate bins.

Weighing

The determination of the total tonnage of dusts emanating from the smelter is a calculated number. The following describes how each number is calculated:

Converter Dusts: The converter dust is collected in the converter stubs. Past studies of the converter dust makeup has led to the development of a standardized calculation. The study shows that approximately 4.56% of the entire converter dust

is composed of the white dust. With this in mind the weight of the white dust is measured using the concentrate truck scale and then divided by 4.56[^] to give a total tonnage for the month. The monthly tonnage is added to the on hand dust at the beginning of the month and then the on hand dust at the end of the month is subtracted out.

Flash Dusts: The flash dust is calculated from a known factor developed through past testing and studies. These past tests and studies show that approximately 4% of the total charge of concentrate and flux fed to the furnace during a month is returned in the form of electrostatic precipitator dust (36.17%) and boiler ESP dust (remainder). The monthly tonnage is added to the on hand dust at the beginning of the month and then the on hand dust at the end of the month is subtracted out.

Fugitive Dusts: The weight of these dusts is determined by the concentrate truck scale and added back into the flash furnace system.

Analytical Procedure (Furnace and Converter Dusts)

The sampling of the furnace and converter dusts are dependent upon the location at which the sample is taken. The flash furnace dusts are conveyed to the furnace by the use of an enclosed loop of drag chains. Samples are obtained through specially placed sampling ports within the drag chain line. Dusts are taken directly from the converter fugitive collection system and the flash fugitive collection system by a truck. Samples are obtained from this truck as it deposits its load into the flash furnace. Analytical methods utilized for the determination of sulfur and copper in the flue dust is identical to those described for incoming concentrates.

Strong Acids (98%)

Strong product grade sulfuric acid (98%) is produced as a byproduct of the smelting process at BHP's double contact acid plant. When the copper concentrate is smelted in the flash furnace process, sulfur dioxide (SO₂) is liberated as a result. This SO₂ is ducted to the acid plant where it is mixed with converter gas and then oxidized to SO₃ with the aid of a vanadium pentoxide catalyst. The newly formed sulfur trioxide dissolves in water to form sulfuric acid.

Inventory (Strong Acid)

Daily inventory is taken on each acid plant storage tank. At specified times each day, operators take the tank acid height level using an oil gauge top float attached to a measurement tape. Knowing the total tank height from the point of entrance to measure and then subtracting out the empty space between that point and the top of the acid the operators can determine the total height of the acid solution in the tank.

Printed charges of the empty space and its correlation into tons of acid in the tanks are readily available to aid the operators.

Outgoing inventory of shipments made by truck and by rail are also recorded on inventory sheets. These forms delineate the number of truck and railcars loaded for each day. The number of gallons that can be loaded on a truck or railcar are known values. At the end of each month a compilation of the total tons acid generated and shipped are tabulated for the sulfur balance.

Knowing the on-hand inventory at the beginning of each month; the on hand inventory at the end of each month; the total tons of acid generated within the acid plant for the given month; and the total tons of acid shipped for the month, the operations personnel can calculate very accurately the amount of sulfur captured within the strong acid process for a given time period.

Accuracy

The accuracy in accounting for sulfur contained within the strong acid process is very high (99%). Trucks and railcars leaving the site are required to weigh in and weight out, so that exact numbers can be recorded for tons of acid leaving the property.

Sampling/Analytical (Strong Acid)

Samples of the strong acid inventory is done on a daily basis for each tank within the entire containment system. These samples are composited on a daily basis according to the percent acid makeup from that tank and knowing the total tons for the entire system. Each daily composite sample is composited into a monthly composite in much the same fashion. This final monthly composite sample is analyzed for an entire suite of analytes and also specifically for SO₂ concentration.

Weak Acids

Weak acid plant blowdown is a byproduct of the double contact acid plant process. The weak acid is an aqueous blowdown solution from the gas humidifying and cooling towers in the acid plant.

Volumetric Determination

Volumetric determinations (gallons per minute) of weak acid plant blowdown resulting from the acid plant process are made by a volumetric flowmeter device installed into the blowdown line. The volumetric flow is monitored on a regular basis and a daily average is maintained in the acid inventory flowsheets.

Sampling/Analytical

Samples (approximately 1,000 ml) of the acid plant blowdown are taken from a spigot located just south of the acid plant control room. Samples are taken from the line via the spigot on a daily basis and analyzed for conductivity, pH and sulfates. The method involved for the analysis of sulfur dioxide in the blowdown is the same method used in the strong acid analysis.

Sulfur in Copper Production

Copper is produced as a final product of the flash furnace and converting process in the form of anodes (approximately 817 pounds each). This anode form of copper is approximately 99% or greater, pure copper. Sulfur is nominally present at less than 100 ppm in the remaining impurities.

Weight Determination

Weight determination for the anodes is made by the use of the refinery anode scale. This electronic-static scale with a digital readout is accurate to +/-0.2%. In the future, they Aisco scale will be used as a backup device when needed.

Anodes Cast

The total weights of the anodes are recorded and reported out in the monthly smelter anode report. This report details the number of pours that each anode wheel makes as well as the complete inventory of beginning on-hand, produced, processed, reject and ending on-hand anodes for the month period.

Sampling

A sample anode is chosen from each lot, (approximately 20-25 anodes makes up a lot). From this anode three samples are taken by the means of a heavy duty drill press. The samples are approximately $\frac{3}{4}$ of an inch in diameter and 2 inches in thickness.

Charge Sampling

Prior to pouring of the molten copper into the anode form, the copper is temporarily held in anode holding vessels, which maintain the temperature of the molten copper. A single anode vessel when full can hold 300 tons of molten copper. A single sample is taken from the anode vessels when full and prior to any pouring of

copper into the anode forms.

Analytical Method

The analytical method involved in the determination of sulfur content in the anodes involves the use of a LECO CS-344 analyzer. This method is also used for other forms of copper including; copper cathodes and copper rod.

Material in Process

Records of the materials in process (total tonnage) are kept for all materials being fed to the flash furnace and converters. Actual physical inventories are taken at a specified time on the first day of each month. These physical inventories include any materials that may be staged for smelting at that very moment (including concentrates in the flash bins that are being smelted at that time).

Weight Determination

Weight determinations are based upon the known volumes of various holding or processing vessels, as well as the known daily production tonnage for all materials in questions at a given time.

In-Process Inventory

As has been previously stated, the monthly change in in-process inventory is calculated for each material in process by taking the difference between the inventory from each material on the first day of the month and multiplying that difference by the monthly composite sulfur assay for that material. The difference between the in-process inventory on the first day of each month is usually a number that is insignificant in the sulfur balance calculations. This is due to the fact that the difference between in-process materials from month to month rarely changes.

ATTACHMENT "E": EQUIPMENT LISTING

Air Quality Control Permit No. 1000047
For
BHP Copper, San Manuel Smelting Operations

Copper Converter Circuit & Anode Furnace Circuit

Unit	Make/Model	Date of Manufacture	Size/Production Capacity	Unit ID	New/Existing
Copper converter	Pierce-Smith	1992	15' dia x 35'	03CVT300(# 3 converter)	New NSPS Subpart P
Copper converter	Pierce-Smith	1966	15' dia x 35'	04CVT400(# 4 converter)	E
Copper converter	Pierce-Smith	1966	15' dia x 35'	05CVT500(# 5 converter)	E
Copper converter	Pierce-Smith	1966	15' dia x 35'	06CVT600(# 6 converter)	E
Converter flux bin (8 each)	Magma	1987	<i>All bins are different</i> Avg. capacity 80 st	50-13-001 to 008	NA
Belt conveyor	Goodyear Pylon	1987	150stph	01COV053(# 37.1 belt)	NA
Belt conveyor	Goodyear Pylon	1987	150stph	01COV054(# 37.2 belt)	NA
Belt conveyor	Goodyear Pylon	1987	150stph	01COV055(# 37.3 belt)	NA
Belt conveyor	Goodyear Pylon	1987	150stph	01COV056(# 37.4 belt)	NA
Belt conveyor	Goodyear Pylon	1987	270stph	10COV038(# 38 belt)	NA
Belt conveyor	Goodyear Pylon	1987	240stph	10COV39 (#39 belt)	NA
Belt conveyor	Goodyear Pylon	1987	460stph	10COV070(# 70 belt)	NA
Radial flow scrubber(4 each)	Lurgi	1987	87,000 scfm	50-30-121 to 124	N/A

Unit	Make/Model	Date of Manufacture	Size/Production Capacity	Unit ID	New/Existing
SO ₂ stripper	N/A	1976	3'3" dia x 10' 6"	50-51-202	N/A
Preheater	Stahl/SPL-6385	1996	90 Mmbtu/Hr	Acid plant train II preheater	NA
Preheater	Stahl/6196-46-34	1994	90 Mmbtu/Hr	Acid plant train III preheater	NA
Belt conveyor	Goodyear Pylon	1987	60stph	06CVT600-15(#6 converter flux belt)	NA
Belt conveyor	Goodyear Pylon	1987	78stph	06CVT600-16(#6 converter short belt)	NA
Belt conveyor	Goodyear Pylon	1987	60stph	06CVT600-18(#6 converter revert belt)	NA
Belt conveyor	Goodyear Pylon	1987	60stph	05CVT500-15(#5 converter flux belt)	NA
Belt conveyor	Goodyear Pylon	1987	78stph	05CVT500-16(#5 converter short belt)	NA
Belt conveyor	Goodyear Pylon	1987	60stph	05CVT500-18(#5 converter revert belt)	NA
Belt conveyor	Goodyear Pylon	1987	60stph	04CVT400-15(#4 converter flux belt)	NA
Belt conveyor	Goodyear Pylon	1987	78stph	04CVT400-16(#4 converter short belt)	NA

Unit	Make/Model	Date of Manufacture	Size/Production Capacity	Unit ID	New/Existing
Belt conveyor	Goodyear Pylon	1987	60stph	04CVT400-18(#4 converter revert belt)	NA
Belt conveyor	Goodyear Pylon	1987	66stph	03CVT300-15(#3 converter flux belt)	NA
Belt conveyor	Goodyear Pylon	1987	78stph	03CVT300-16(#3 converter short belt)	NA
Belt conveyor	Goodyear Pylon	1987	60stph	03CVT300-18(#3 converter revert belt)	NA
Converter roof fans (6 each)	PI-42791-1	Pre-1974	40HP at 1750RPM 12 ft. diameter	10FAN001-4 to 9	E
Utility vessel	Pierce-Smith (modified)	Pre-1974	13' dia x35'	04ANV500(#5 utility vessel)	E
Utility vessel	Pierce-Smith (modified)	Pre-1974	13' dia x35'	04ANV600(#6 utility vessel)	E
Anode vessel	Pierce-Smith (modified)	Pre-1974	13' dia x35'	01ANV100(#1 anode vessel)	E
Anode vessel	Pierce-Smith (modified)	Pre-1974	13' dia x35'	01ANV200(#2 anode vessel)	E
Anode vessel	Pierce-Smith (modified)	Pre-1974	13' dia x 30'	02ANV300(#3 anode vessel)	E
Anode vessel	Pierce-Smith (modified)	Pre-1974	13' dia x 30'	02ANV400(#4 anode vessel)	E

Unit	Make/Model	Date of Manufacture	Size/Production Capacity	Unit ID	New/Existing
Anode casting wheel	Traylor	Pre-1974	45' dia, 28 molds	01ACW100(#1 anode casting wheel)	E
Anode casting wheel	Traylor	Pre-1974	34' dia, 20 molds	02ACW200(#2 anode casting wheel)	E
Anode preparation machine	AISCO	1987	740stph	05APM100 (anode prep machine)	N/A
Anode roof fans(3 each)	PI-42791-1	Pre-1974	40HP at 1750RPM 12 ft. diameter	10FAN001-1 to 3	E

Rotary Dryer, Flash Smelter Circuit, Flue Dust Leach Circuit and Powerhouse Boilers

Unit	Make/Model	Date of Manufacture	Size/Production Capacity	Unit ID	New/Existing
Solvent extraction circuit	EIMCO P.E.C.	1996	300 gpm	5.14-6.5	N/A
Wet charge bin	NA	1987	464 tons	30-13-009	N/A
Wet charge bin	NA	1987	464 tons	30-13-010	N/A
Wet charge bin	NA	1987	464 tons	30-13-011	N/A
Flux blending bin	NA	1987	250 tons	30-13-012	N/A
Belt feeder	Goodyear Pylon	1987	150stph	30-13-015 (wet charge belt feeder)	N/A
Belt feeder	Goodyear Pylon	1987	150stph	30-13-016 (wet charge belt feeder)	N/A

Unit	Make/Model	Date of Manufacture	Size/Production Capacity	Unit ID	New/Existing
Belt feeder	Goodyear Pylon	1987	150stph	30-13-017 (wet charge belt feeder)	N/A
Belt feeder	Goodyear Pylon	1987	15stph	30-13-018 (flux belt feeder)	N/A
Rotary dryer	Fuller	1987	12'6" dia x 131'3"	30-64-050	New- NSPS Subpart P
Drag conveyor	Rauma Repola	1987	175stph	30-48-080(# xxx drag conveyor)	N/A
Dry charge bin	Moller	1987	600 tons	30-13-140	N/A
Drag feeders (2 each)	Rauma Repola	1987	100 stph	30-48-145 & 146 (# 145 & 146 drag feeders)	N/A
Flue dust bin	N/A	1987	120 tons	30-13-150	N/A
Drag feeders (2 each)	Rauma Repola	1987	30 stph	30-48-153 & 157(# 153 & 157 drag feeders)	N/A
Flash smelting furnace	Outokumpu	1999	220stph nominal charge (new conc)	30-62-237	New- NSPS Subpart P
Waste heat boiler	Ahlstrom	1987	110' x 20' x 46'	01WHB320	N/A
Waste heat boiler-electrostatic precipitators (3 each)	Flakt	1987,1987, 1997	30,000 scfm each	01ESP355, 356 & 357	N/A

Unit	Make/Model	Date of Manufacture	Size/Production Capacity	Unit ID	New/Existing
Drag conveyor	Rauma Repola	1987	20stph	30-48-375(# 375 drag conveyor)	N/A
Roll crusher	Rauma Repola	1987	20stph	30-01-380	N/A
Drag conveyors (2 each)	Rauma Repola	1987	15stph	03DCH145 & 146(drag conveyors #s 145 & 146))	N/A
Flue dust rotary feeder	Moller	1987	30stph	30-07-403	N/A
Flue dust pneumatic conveyor system	Moller	1987	50 stph	30-49-410 to 440	N/A
Superheater	Radco/MSN870 21-1	1987	41.2 Mmbtu/Hr	01SUH001	N/A
Diesel Generators (2 each)	General Motors EMD	1987	2.4 kv each	90-97-930 & 931	N/A
Direct fired boiler # 6	Babcock & Wilcox/FM2840	1990	98.4 Mmbtu/Hr	01BLR006	E
Direct fired boiler # 7	Babcock & Wilcox/FM2397	1992	167.0 Mmbtu/Hr	01BLR007	New-NSPS Subpart Db
Direct fired boiler # 8	Babcock & Wilcox/FM2397	1995	167.0 Mmbtu/Hr	01BLR008	New-NSPS Subpart Db
Direct fired boiler # 9	Babcock & Wilcox/FMB117 3	1997	77.8 Mmbtu/Hr	01BLR009	New-NSPS Subpart Dc
Flue dust bin	N/A	1992	300 tons	5.14-2.0-2-0	New-NSPS Subpart LL
Flue dust dump bin	N/A	1992	150 tons	5.14-3.0-1-0	New-NSPS Subpart LL

Unit	Make/Model	Date of Manufacture	Size/Production Capacity	Unit ID	New/Existing
Vibrating screen	W.S. Tyler	1992	4' x 8' double deck	5.14-3.0-1-3 (dust chip screen)	New-NSPS Subpart LL
Dust storage bin	N/A	1992	75 tons	5.14-4.0-1-1	New-NSPS Subpart LL

Lime Circuit, Flux Circuit, and Slag Handling Circuit

Unit	Make/Model	Date of Manufacture	Size/Production Capacity	Unit ID	New/Existing
Receiving bin	Magma	Pre-1983	300tons	01BIN001 (Limestone receiving bin)	E
Limestone storage bin	N/A	Pre-1983	500 tons	01BIN004 (Limestone bin #1)	E
Burnt lime storage bins, 2 each	N/A	Pre-1983	500 tons each	01BIN005 & 6 (Burnt lime storage bins 1 & 2)	E
Converter flux bin	Magma	1987	700 tons	01BIN018 (Converter flux bin)	New NSPS Subpart LL
Flash flux bin	Magma	1987	1000 tons	01BIN053 (Flash fine flux bin)	New NSPS Subpart LL
Surge bins, 4 each	Magma	Pre-1983	500 tons, each	01BIN032 A,B,C &D (Flux bins #32 A, B, C & D)	E
Pan feeder	Stephen Adamson	Pre-1983	5 ft	01PEF028 (jaw crusher pan feeder)	E
Jaw crusher	Birdshorl'd Buchanan	Pre-1983	30" x 42"	01CRS029	E

Unit	Make/Model	Date of Manufacture	Size/Production Capacity	Unit ID	New/Existing
Pan feeders, 4 each	2-NICO 2-Stephen Adamson	Pre-1983	48" x 8.5"	01PEF032 A, B, C &D (#32A,B,C & D pan feeders)	E
Vibrating screens, 2 each	NA/double deck	Pre-1983	48" x 110"	01SCN033 & 042(east & west shaker screens)	E
Cone crushers, 2 each	Nordberg, shorthead	Pre-1983	5.5 ft.	01CRS033 & 042 (east silica & west slag cone crushers)	E
Vibrating screen	Hewitt Robins	Pre-1983	48" x 120"	01SCN001 (limestone screen)	E
Lime kiln	Allis Chalmers	Pre-1983	7'6"dia x 180'	01KLN045	E
Drag chain	Linkbelt	Pre-1983	16" x 60'	#45 drag chain	E
Bucket elevator	Stephens Adamson	Pre-1983	12" x 7" x 11.75"	#46 bucket elevator	E
Drag chain	Linkbelt	Pre-1983	16" x 51.6 ft.	#47 drag chain	E
Drag chain	Linkbelt	Pre-1983	16" x 58 ft. 8"	#48 drag chain	E
Lime slaker	Dorr Oliver	Pre-1983	4stph	01SLK048	E
Drag chain	Linkbelt	Pre-1983	16" x 58 ft. 8"	#49 drag chain	E
Flux Crusher	Barmac/MarkIII	1987	225stph	01CRS045	New NSPS Subpart OOO

Unit	Make/Model	Date of Manufacture	Size/Production Capacity	Unit ID	New/Existing
Vibrating Screen	Mogensen/5 Deck	1987	300stph	01SCN035 (silica vibrating screen)	New NSPS Subpart OOO
Flux Hopper	Magma	1987	40 tons	01HOP042	New NSPS Subpart OOO
Jaw crusher	Allis Chalmers 32" x 42", 150HP	Pre 1983	300stph	01CRS100 (slag mine crusher)	E

Concentrate Handling Circuit

Unit	Make/Model	Date of Manufacture	Size/Production Capacity	Unit ID	New/Existing
Concentrate bin	Magma	Pre-1982	500 st each	20-13-010(Pinto Valley bin)	E
Concentrate bin	Magma	Pre-1982	500 tons	01BIN016	E
Concentrate bin	Magma	Pre-1982	500 tons	01BIN017	E
Concentrate bin	Magma	Pre-1982	500 tons	01BIN018G (slag conc)	E
Concentrate bin	Magma	Pre-1982	500 tons	01BIN020A	E
Concentrate bin	Magma	Pre-1982	500 tons	01BIN020B	E
Concentrate bin	Magma	Pre-1982	500 tons	01BIN020C	E
Concentrate bin	Magma	Pre-1982	500 tons	01BIN020D	E
Concentrate bin	Magma	Pre-1982	500 tons	01BIN020E	E
Concentrate bin	Magma	Pre-1982	500 tons	01BIN020F	E
Concentrate bin	Magma	Pre-1982	750 tons	01BIN051	E

Unit	Make/Model	Date of Manufacture	Size/Production Capacity	Unit ID	New/Existing
Concentrate bin	Magma	Pre-1982	500 tons	01BIN072A (# 5 pocket)	E
Concentrate bin	Magma	Pre-1982	500 tons	01BIN072B (# 5 pocket)	E
Concentrate bin	Magma	Pre-1982	500 tons	01BIN074A (Custom conc)	E
Concentrate bin	Magma	Pre-1982	500 tons	01BIN074B (Custom conc)	E
Concentrate bin	Magma	Pre-1982	500 tons	01BIN074C (Custom conc)	E
Concentrate bin	Magma	Pre-1982	500 tons	01BIN074D (Custom conc)	E
Concentrate bin	Magma	Pre-1982	500 tons	01BIN074E (Custom conc)	E
Concentrate bin	Magma	Pre-1982	500 tons	01BIN074F (Custom conc)	E
Concentrate bin	Magma	Pre-1982	500 tons	01BIN080A (#9 pocket)	E
Concentrate bin	Magma	Pre-1982	500 tons	01BIN080B (#9 pocket)	E
Concentrate bin	Magma	Pre-1982	500 tons	01BIN220 (Custom conc)	E
Concentrate bin	Magma	Pre-1982	500 tons	01BIN221 (Custom conc)	E
Residue bin	Magma	Pre-1982	500 tons	01BIN094 (Residue bin)	E
Residue bin	Magma	Pre-1982	500 tons	01BIN095 (Residue bin)	E

Unit	Make/Model	Date of Manufacture	Size/Production Capacity	Unit ID	New/Existing
Slag bin	Magma	Pre-1982	750 tons	01BIN100 (Slag bin)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	50 stph	01COV18G (#18G belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	120stph	01COV020 (#20 belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	120stph	01COV020 A (#20 A belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	120stph	01COV020 B (#20 B belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	120stph	01COV020 C (#20 C belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	120stph	01COV020 D (#20 D belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	120stph	01COV020 E (#20 E belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	120stph	01COV020 F (#20 F belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	420stph	01COV021(#21 belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	420stph	01COV022(#22 belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	420stph	01COV022 N (#22N belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	420stph	01COV023(#23 belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	420stph	01COV024(#24 belt)	E
Belt Conveyor	Goodyear Nylon	Pre-1982	250stph	01COV030(#30 belt)	E

Unit	Make/Model	Date of Manufacture	Size/Production Capacity	Unit ID	New/Existing
Tripper belt	Goodyear Nylon	Pre-1982	250stph	01TRP031(#31 tripper belt)	E
Belt Conveyor	Goodyear Nylon	Pre-1982	250stph	01COV031(#31 belt)	E
Belt Conveyor	Goodyear Nylon	Pre-1982	350stph	01COV033(#33 belt)	E
Belt Conveyor	Goodyear Nylon	Pre-1982	175stph	01COV034(#34 belt)	E
Belt Conveyor	Goodyear Nylon	Pre-1982	175stph	01COV035(#35 belt)	E
Tripper belt	NA	Pre-1982	175stph	01TRP036(#36 tripper)	E
Belt Conveyor	Goodyear Nylon	Pre-1982	175stph	01COV036(#36 belt)	E
Belt Conveyor	Goodyear Nylon	Pre-1982	78stph	01COV036 A (#36A belt)	E
Belt Conveyor	Goodyear Nylon	Pre-1982	280stph	01COV040(#40 belt)	E
Belt Conveyor	Goodyear Nylon	Pre-1982	350stph	01COV042(#42 belt)	E
Belt Conveyor	Goodyear Nylon	Pre-1982	350stph	01COV043(#43 belt)	E
Belt Conveyor	Goodyear Nylon	Pre-1982	195stph	01COV051(#51 belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	234stph	01COV058(#70B belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	234stph	(#70A belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	420stph	01COV065(#65 belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	420stph	01COV070(#70 belt)	E

Unit	Make/Model	Date of Manufacture	Size/Production Capacity	Unit ID	New/Existing
Belt Conveyor	Goodyear Pylon	Pre-1982	350stph	01COV071(#71 belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	300stph	01COV072 A(#72A belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	300stph	01COV072 B (#72B belt)	E
Tripper belt	Goodyear Pylon	Pre-1982	350stph	01TRP073(#73 tripper belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	350stph	01COV073(#73 belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	240stph	01COV074 A(#74A belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	240stph	01COV074 B (#74B belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	240stph	01COV074 C (#74C belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	240stph	01COV074 D(#74D belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	240stph	01COV074 E (#74E belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	240stph	01COV074 F (#74F belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	300stph	01COV080 A(#80A belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	300stph	01COV080 B (#80B belt)	E

Unit	Make/Model	Date of Manufacture	Size/Production Capacity	Unit ID	New/Existing
Belt Conveyor	Goodyear Pylon	Pre-1982	300stph	01COV081 (#81 belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	300stph	01COV082 (#82 belt)	E
Belt Conveyor	Goodyear Nylon	Pre-1982	250stph	01COV083 (#83 belt)	E
Belt Conveyor	Goodyear Nylon	Pre-1982	250stph	01COV084 (#84 belt)	E
Belt Conveyor	Goodyear Nylon	Pre-1982	250stph	01COV085 (#85 belt)	E
Belt Conveyor	Goodyear Nylon	Pre-1982	250stph	01COV086 (#86 belt)	E
Belt Conveyor	Goodyear Nylon	Pre-1982	20stph	01COV094 (#94 belt)	E
Belt Conveyor	Goodyear Nylon	Pre-1982	20stph	01COV095 (#95 belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	300stph	01COV010 5 (#105 belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	300stph	01COV021 2 (#212 belt)	E
Tripper belt	Goodyear Pylon	Pre-1982	300stph	01TRP213 (#213 tripper belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	300stph	01COV022 0 (#220 belt)	E
Belt Conveyor	Goodyear Pylon	Pre-1982	300stph	01COV022 1 (#221 belt)	E
Belt Conveyor	Goodyear	Pre-1982	10stph	02COVCV0 1(Custom matte conveyor #1)	E

Unit	Make/Model	Date of Manufacture	Size/Production Capacity	Unit ID	New/Existing
Belt Conveyor	Goodyear	Pre-1982	10stph	02COVCV02(Custom matte conveyor #2)	E
Belt Conveyor	Goodyear	Pre-1982	10stph	02COVCV03(Custom matte conveyor #3)	E
Belt Conveyor	Goodyear	Pre-1982	10stph	02COVCV02 (Kennecott matte conveyor)	E
Rail dump station hopper	Goodyear	Pre-1982	10stph		E
Custom concentrate bin (2 bins)	NA	Pre-1982	30' dia x 14' 10" high	20-13-214	E
Concentrate storage building	NA	1999	40,000st	NA	E

Electrolytic Refinery & Miscellaneous Boilers

Unit	Make/Model	Date of Manufacture	Size/Production Capacity	Unit ID	New/Existing
Leach tanks (4 each)	N/A	1992	12' dia x 13'	5.14-5.0-1-0,2,4 & 6	N/A
Sulfuric acid leach tank	EIMCO P.E.C.	1992	10' dia x 10'	5.14-5.0-1-9 (slurry leach tank)	N/A
Commercial cells (1,176 each)	Polymer Concrete	Various 1975-present	3.5' x 15.75'	Sections 1-28	E
Stripper cells (68 each)	Polymer Concrete	Various 1975-present	3.5' x 15.75'	Section 1A-1B 2A-2B	E

Unit	Make/Model	Date of Manufacture	Size/Production Capacity	Unit ID	New/Existing
Liberator cells (24 each)	Polymer Concrete	Various 1975-present	3.5' x 15.75'	Sections 1-6	E
Direct fired boilers (2 each)	Babcock & Wilcox/FM 10.57	1971	52.1 Mmbtu/Hr each	Refinery boilers # 1 & 2	E
Refinery byproducts processing	Collection tanks, Mix tank, Exhaust system and bag housing, Autoclave, Heater/dryer filters, crusher, rolls.	1992	85,000 dried pounds per month.	Autoclave	E
Demisters (2 each)	1.Hartzel fan Model #34-12-FWF3 2. Hartzel fan model #34-18-MG3	1972		1. Batch tank 2. Leach tank demisters	E
Thermal emissions breaker	Fulton/FT-0160-c	1995	1.6 Mmbtu/Hr	Rod plant thermal emissions breaker	E
Shaft furnace	ASARCO/series 320	1971	50.0 Mmbtu/Hr	Rod plant shaft furnace	E

Miscellaneous Storage Tanks

Unit	Size/Production Capacity	Unit ID	New/Existing
Drewspence 738	2600 gal	DR-1	Existing
Drewspence 738	1600 gal	DR-2	Existing
Caustic Soda	7500 gal	CS-1	Existing
Caustic Soda	12000 gal	CS-2	Existing
Caustic Soda	10178 gal	CS-3	Existing
Liquid Oxygen	41940 gal	S-12	Existing
Liquid Oxygen	44300 gal	S-12	Existing

Unit	Size/Production Capacity	Unit ID	New/Existing
Liquid Oxygen	6160 gal	S-12	Existing
Soda ash	5050 gal	SD-2	Existing
Chlorine tanks	200 gal	N/A	Existing
Isopropyl alcohol	8000 gal	IA-1	Existing

Listing of Air Pollution Control Equipment

Unit	Make/Model	Date of Manufacture/ rebuild	Size/Production Capacity	Unit ID
Wet Scrubber (lime kiln)	Ducon/ UV-4, Size 102	1994	16000 acfm	S-20
Wet Scrubber (lime storage and collection)	AAF Roto Clone/ Size 24, ARR D, Mod 8	1954	16700 acfm	S-19
Wet Scrubber (lime plant secondary crusher)	Rotoclone/ Size 20, Type N, App D Mod 8	1954/1979	12500 acfm	S-18
Wet Scrubber (lime flux track hopper)	Rotoclone/ Size 6 Type N, ARR D	1954	8000 acfm	S-17
Baghouse (flux grinding)	W.W. Sly Mfg. Co	1987	10,000 acfm	S-21
Baghouse (flux screening)	W.W. Sly Mfg. Co	1987	7000 acfm	S-22
Baghouse (concentrate dryer exhaust)	Wheelabrator/ Jet III dust collector	1999	100,000 acfm	S-31
Electrostatic Precipitator (flash furnace matte and slag launder)	Research-Cottrell	1973/1987	150, 000 acfm	S-5
Electrostatic Precipitator (converter secondary hood gas)	Research-Cottrell	1973/1991	250, 000 acfm	S-6

Unit	Make/Model	Date of Manufacture/ rebuild	Size/Production Capacity	Unit ID
Metallurgical Sulfuric Acid Plant- Train II	Monsanto Envirochem	1974/1987	35,000 acfm to 104,000 acfm	S-3
Metallurgical Sulfuric Acid Plant- Train III	Monsanto Envirochem	1994	45,000 acfm to 140,000 acfm	S-4
Baghouse (refinery tanks slimes processing area)	Torit/ Model 81PJD 8	1992	5400 acfm	S-9
Demister (refinery tankhouse liberator)	Industrial Air/ 162-060-6433	1970	65,500 acfm	B-5
Baghouse (flue dust leach circuit)	Mixropol 755	1994	4000 acfm	S-33
Baghouse (flue dust leach circuit)	Mixropol 425	1994	2000 acfm	S-34
Low Pressure Wet Scrubber (Flue Dust Leach Circuit)	Harrington 254	1994	3000 acfm	S-35
Low Pressure Wet Scrubber (Flue Dust Leach Circuit)	Harrington 152	1994	1000 acfm	S-36

